No.01

Oki Data CONFIDENTIAL

B2200/B2200n/B2400/B2400n
Maintenance Manual

[Rev. 3]

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Preface

This Maintenance Manual describes the field maintenance methods for maintenance personnel.
Please note that you should refer to the Printer Handbook for the handling and operating methods of the equipment.

***Note*:**

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- The contents are subject to change without notice, due to improvements of the machine and description in the manual itself.

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1. CONFIGURATION

1.1 System Configuration

B2200n consists of control and engine blocks in the standard configuration, as shown in Figure 1-1.

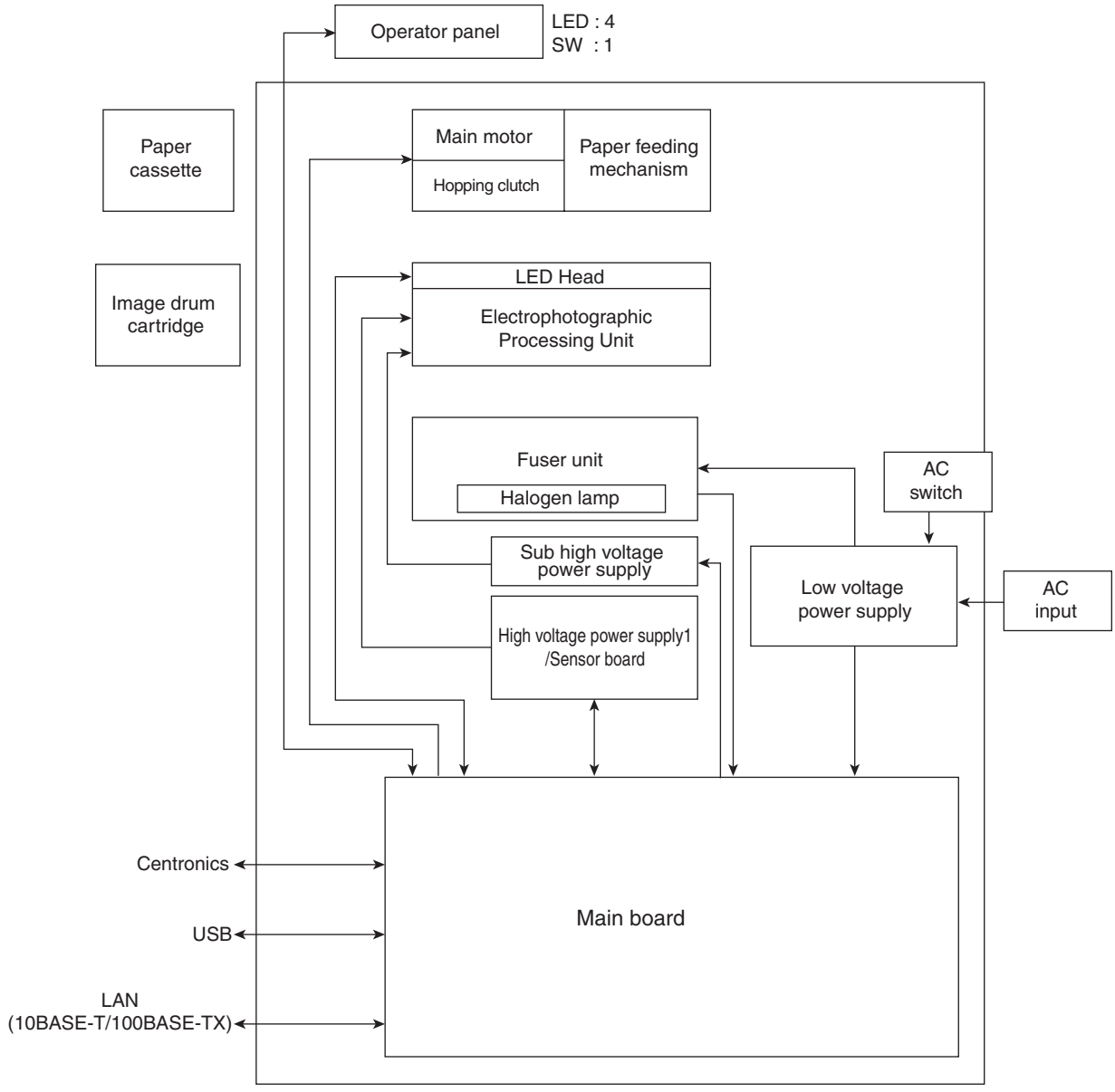


Figure 1-1

1.2 Printer Configuration

The printer unit consists of the following hardware components:

- Electrophotographic Processor
- Paper Feeder
- Controller
- Operator Panel
- Power Supply Unit

The printer unit configuration is shown in Figure 1-2.

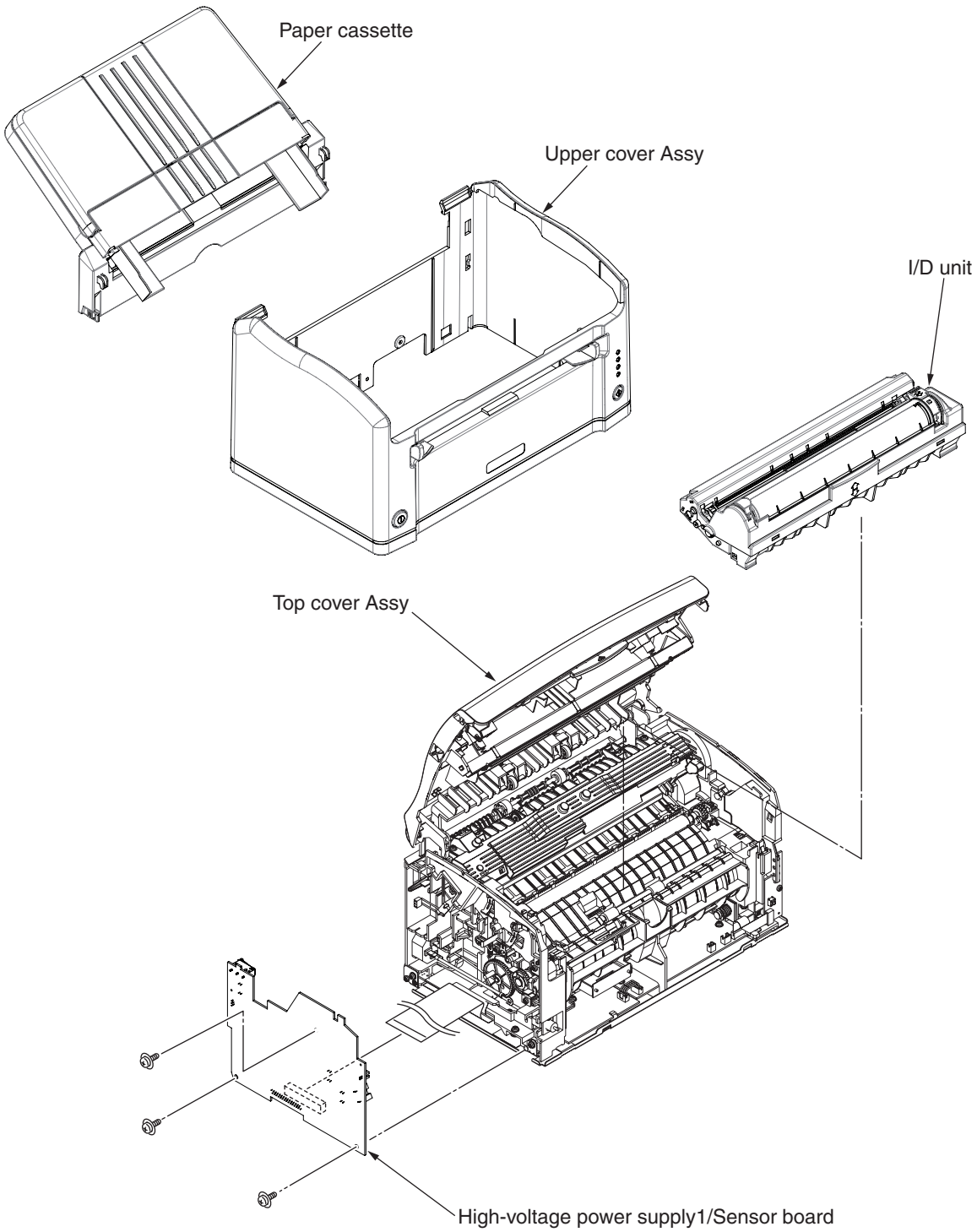


Figure 1-2

1.3 Specification

(1) Type : Desktop

(2) External dimensions : 221mm (Height) x 321mm (Width) x 343mm (Depth)

(3) Weight : Approx. 4.8 kg (Including consumables.)

(4) Developing method : Dry and single-component

Exposing method : LED head

(5) Paper used

Type	Weight/ Thickness	Size		Paper feeding		Remarks
				Tray 1	Manual	
Plain paper (○) Heavy paper (△)	Ream weight 55~75kg Ream weight 76~90kg	A4	210x297	○	○ / △	
		A5	148x210	-	○ / △	
		A6	105x148	-	○ / △	
		B5	182x257	-	○ / △	
		Custom	Free size	-	○ / △	
		LETTER	215.9x279.4	○	○ / △	
		Legal 13	215.9x330.2	○	○ / △	
		Legal 14	215.9x355.6	○	○ / △	
		Executive	184.15x266.7	-	○ / △	
		Statement	139.7x215.9	-	○ / △	
Postcard	Postal card or postcard which ream weight is 135kg or less	Postcard	100x148	-	○	B2200n(JP) only
		Double postcard	148x200	-	○	
Envelope	Kraft envelope of 85g/m^2 or equivalent	Envelope 1	120x235	-	○	B2200n(JP) only
		Envelope 2	90x205	-	○	
		Envelope 3	105x235	-	○	
		Envelope free	Free size	-	○	
	Envelope using paper of 24lb and which flap part is folded properly	Com-9	98.4x225.4	-	○	
		Com-10	104.78x241.3	-	○	
		DL	110x220	-	○	
		C5	162x229	-	○	
		Monarch	98.3x190.5	-	○	
Label	0.1~0.15mm	A4	210x297	-	○	
		LETTER	215.9x279.4	-	○	
Transparency	0.08~0.11mm	A4	210x297	-	○	
		LETTER	215.9x279.4	-	0	

Free size: Long edge 147~356mm, Short edge 89~216mm

Standard paper : Xerox 4200 (20lb)

Application paper (Manual face-up feed) : Label
: Envelope
: OHP paper (transparency)

(6) Printing speed Continuous printing Maximum 20 pages per minute (plain paper, A4 copy mode)
Maximum 21 papes per minute (plain paper, Letter copy mode)

A printing speed varies depending on paper size, paper type, paper weight and paper feeding method.

Warm-up time : About 25 seconds [25℃(77˚F)]

(7) Paper feeding method : Automatic feed and manual feed

(8) Paper delivery method : Face up

(9) Resolution : 300×300, 600×600, 600×1200dots/ inch

(10) Power input : AC110~127V±10%, 50/60Hz±2Hz
AC220~240V±10%, 50/60Hz±2Hz

(11) Power consumption Typical operation: Max. 660W, Ave. 360W (25℃)
Power save mode: Max. 10W

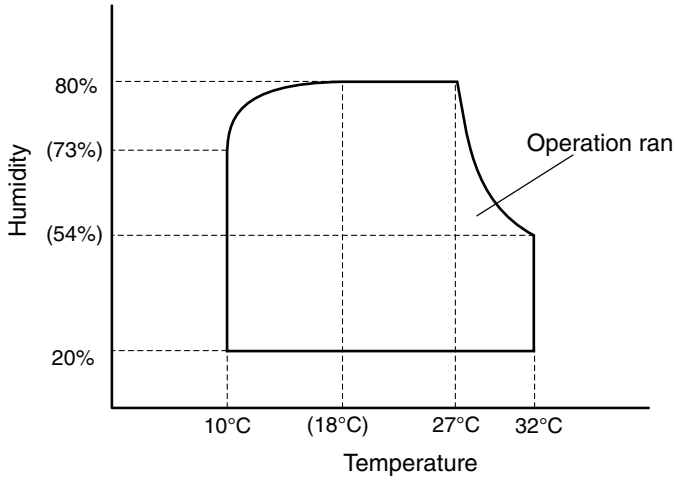
(12) Temperature and Humidity

Temperature

	°F	℃	Remarks
In operation	50~89.6	10~32	
Not in operation	32~109.4	0~43	Power OFF
During storage*	14~109.4	-10~43	
In shipping*	-20~158	-29~70	Without drum and toner
In shipping*	-20~122	-29~50	With drum and toner

Humidity

	Relative humidity (%)	Maximam wet bulb temperature (℃)	Remarks
In operation	20~80	25	
Not in operation	10~90	26.8	Power OFF
During storage*	10~90	35	
In shipping	10~90	40	



Note: *Only for packed unit

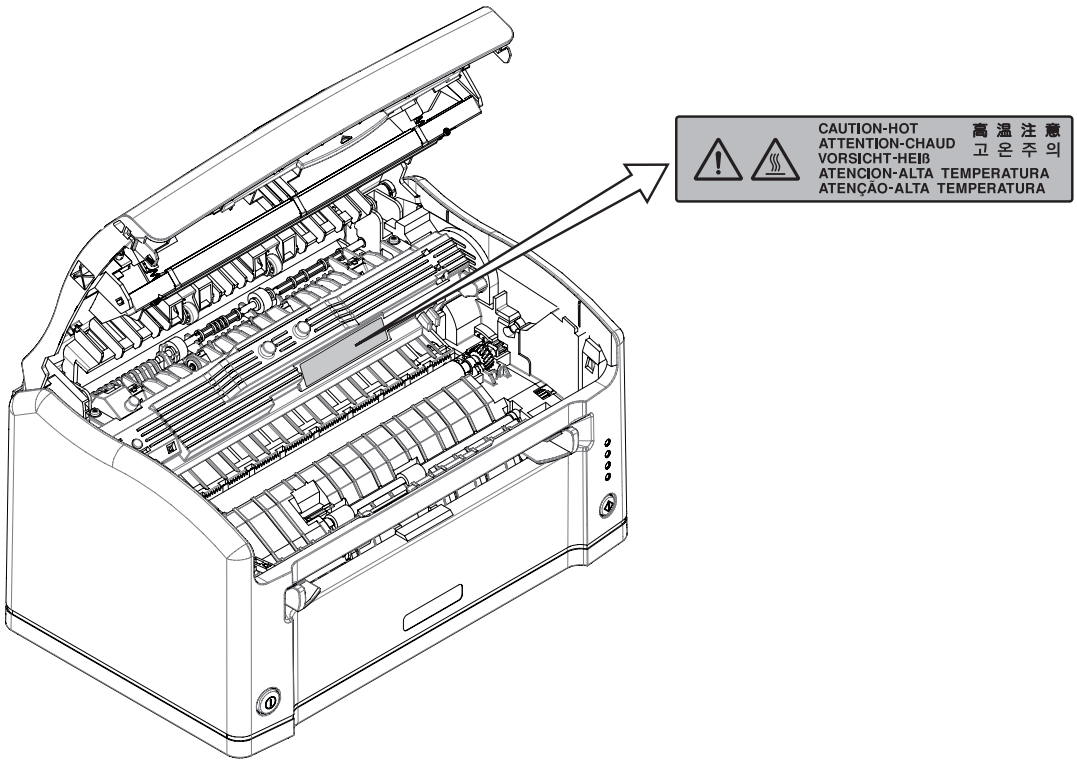
1. Storage conditions specified above apply to printers packed in cardboard boxes for shipping.
2. Temperature and humidity must be in the range where no condensation occurs.
3. The image drum cartridge and the toner cartridge are warranted for a period of one year from the date of shipping against defective material or workmanship.
4. Delivery of the machine in hot areas (43℃(100°F) or higher) should be one month or shorter.

(13) Noise	In operation	:	JIS Z8731 compatible A range, SLOW average 52dBA or less Power save mode: Silence (Back ground level)
(14) Consumables	Toner cartridge	:	About 2,000 pages (A4 ISO/ IEC 19752 printing pattern continuous printing. Except the first toner cartridge that is set in the new drum cartridge.)
	Image drum cartridge	:	About 15,000 pages (A4 5% duty continuous printing)
		:	About 10,000 pages (3 pages/ job)
		:	About 6,000 pages (1 page/ job)

1.4 Marking

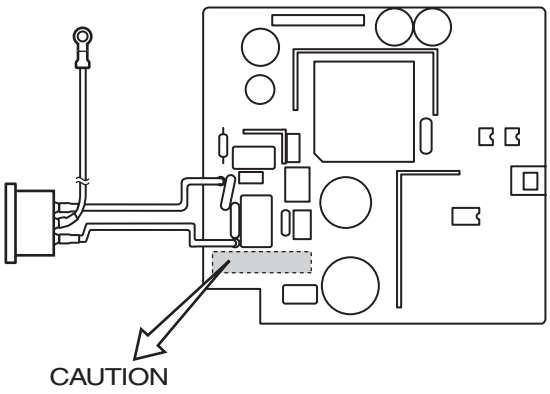
1.4.1 Warning Label

The warning labels are affixed to the sections which may cause bodily injury.
Follow the instructions on warning labels during maintenance.

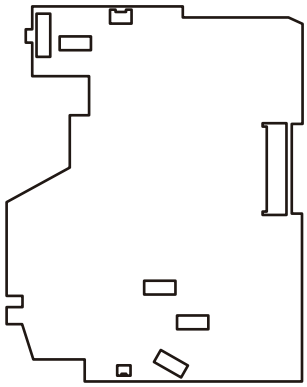


1.4.2 Warning/ Caution Marking

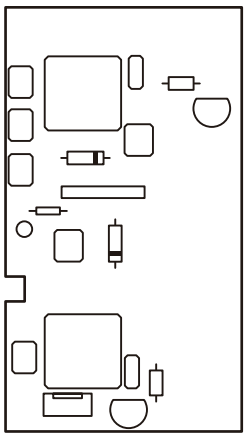
The following low voltage power supply, high voltage power supply 1/ sensor board and sub high voltage power supply board involve the risk of electric shock, and especially a caution marking is put on the low voltage power supply.



Low voltage power supply



High voltage power supply1 /Sensor board



Sub high voltage power supply

A heatsink and a core of transformer involve the risk of electric shock. Test before touching.
Even after fuse opening, the circuit involves the risk of electric shock.

Note: If removing the cover assy upper and turning power on, be careful not to touch the possible part of electric shock in the low voltage power supply, high voltage power supply 1/ sensor board and sub high voltage power supply board.

2. PARTS REPLACEMENT

This section explains the procedures for replacement of parts, assemblies, and units in the field. Only the disassembly procedures are explained here. For reassembly, reverse the disassembly procedure.

2.1 Precautions for Parts Replacement

(1) Before starting to replace parts, remove the AC cord and interface cable.

(a) Remove the AC cord in the following sequence:

i) Turn off ("○") the power switch of the printer.

ii) Disconnect the AC inlet plug of the AC cord from the AC receptacle.

iii) Disconnect the earth wire from the earth terminal of the AC power source outlet.

iv) Disconnect the AC cord and interface cable from the printer.

⚠Warning	Risk of Electric Shock	⚡

There is a risk of electric shock during replacement of the low voltage power supply.

Use insulating gloves or avoid direct contact with any conducting part of the power supply, and caution should be exercised during replacement.

The capacitor may take one minute to complete discharge after the AC cord is unplugged. Also, there is a possibility that the capacitor doesn't discharge because of a breakage of the PCB, etc., so remember the possibility of electric shock to avoid electric shock.

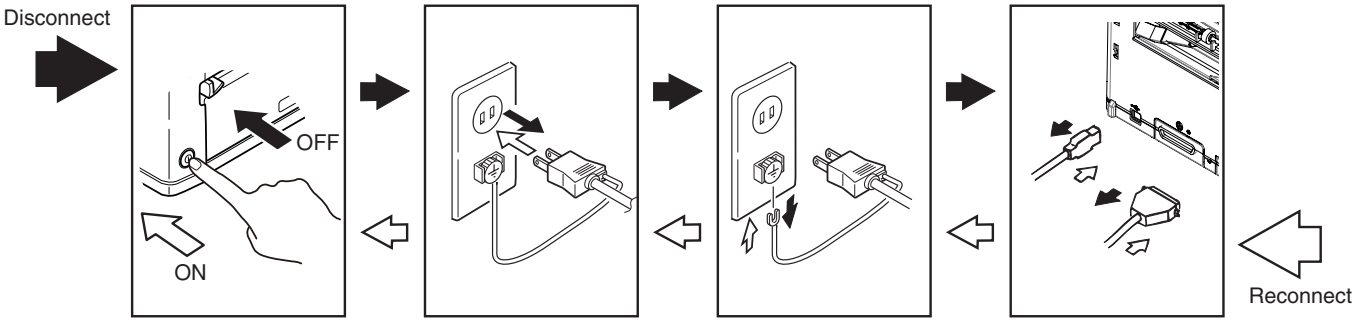
(b) Reconnect the printer in the following procedure.

i) Connect the AC cord and interface cable to the printer.

ii) Connect the earth wire to the earth terminal of the AC receptacle.

iii) Connect the AC inlet plug to the AC receptacle.

iv) Turn on ("I") the power switch of the printer.



(2) Do not disassemble the printer as long as it is operating normally.

(3) Do not remove parts which do not have to be touched; try to keep the disassembly to a minimum.

(4) Use specified service tools.

(5) When disassembling, follow the laid out sequences. Parts may be damaged if these sequences are not followed.

(6) Since screws, collars and other small parts are likely to be lost, they should temporarily be attached to the original positions during disassembly.

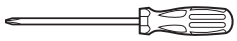
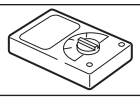
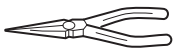
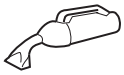
(7) When handling IC's such as microprocessors, ROMs and RAMs, or circuit boards, do not wear gloves that are likely to generate static electricity.

(8) Do not place printed circuit boards directly on the equipment or floor.

[Service Tools]

The tools required for field replacement of printed circuit boards, assemblies and units are listed in Table 2-1.

Table 2-1 Service Tools

No.	Service Tools		Q' ty	Application	Remarks
1		No.1-100 Philips screwdriver	1	2~2.5mm screws	
2		No.2-100 Philips screwdriver	1	3~5mm screws	
3		No.3-100 screwdriver	1		
4		No.5-200 screwdriver	1		
5		Digital multimeter	1		
6		Pliers	1		
7		Handy cleaner	1		Reter to the following note.

Note! Use a vacuum cleaner dealing with toner. Using a common vacuum cleaner may cause fire.

2.2 Parts Layout

This section explains the layout of main components the equipment.

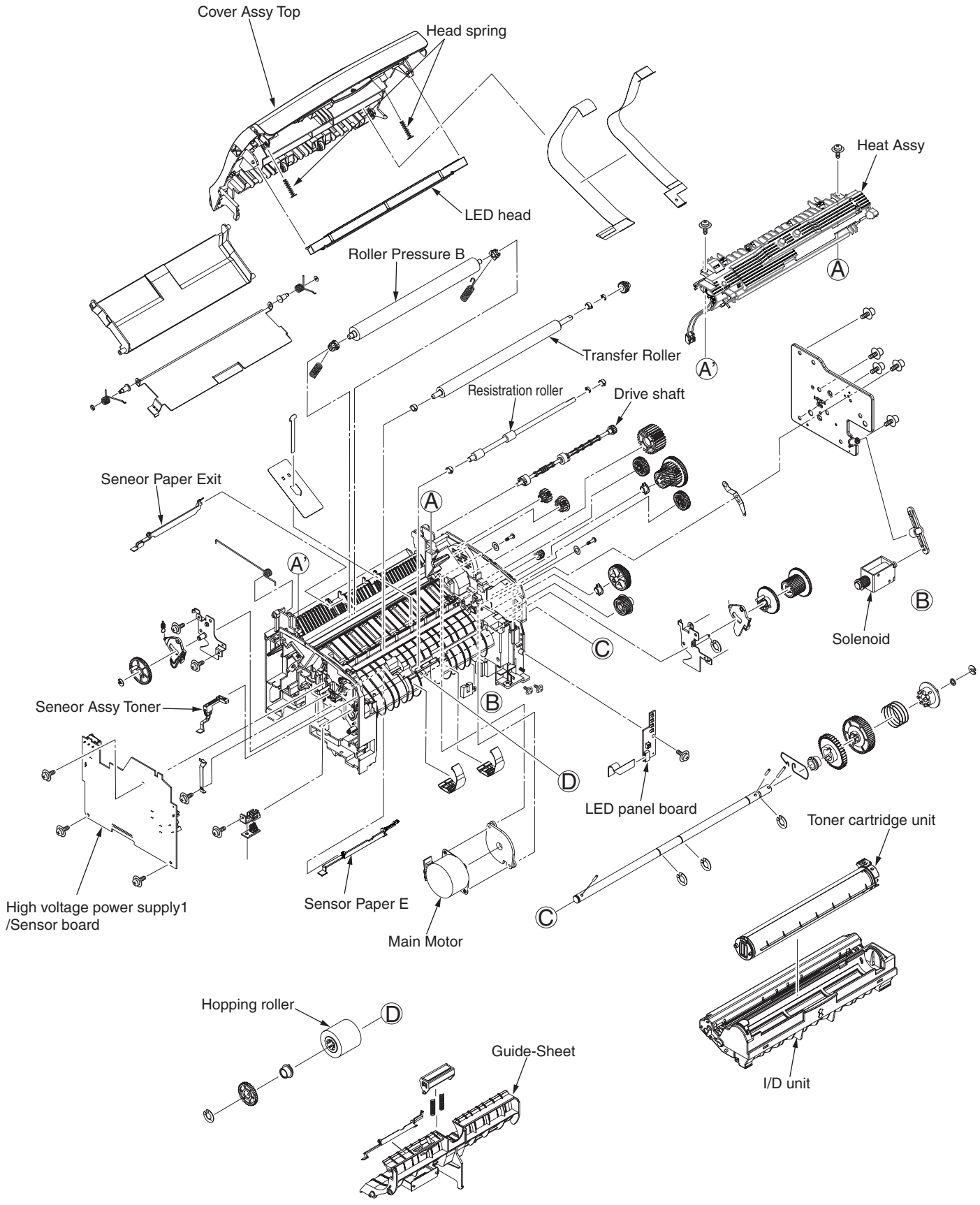


Figure 2-1

[Upper cover unit]

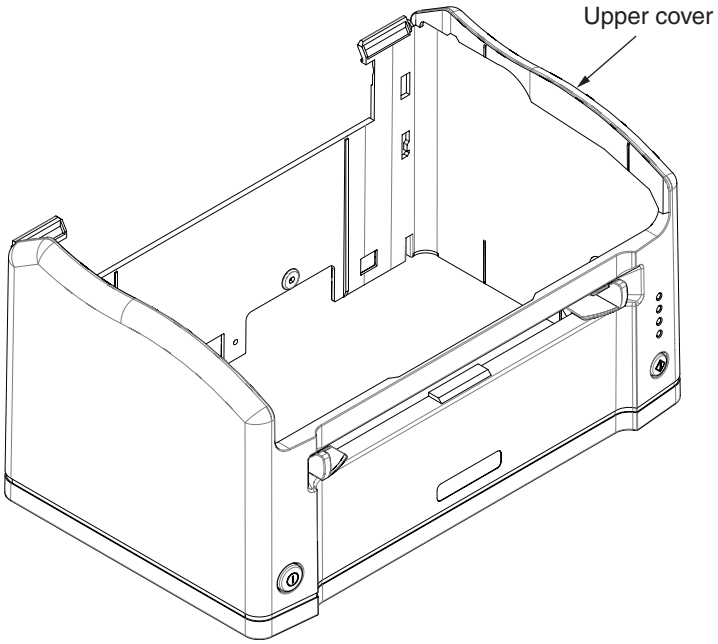
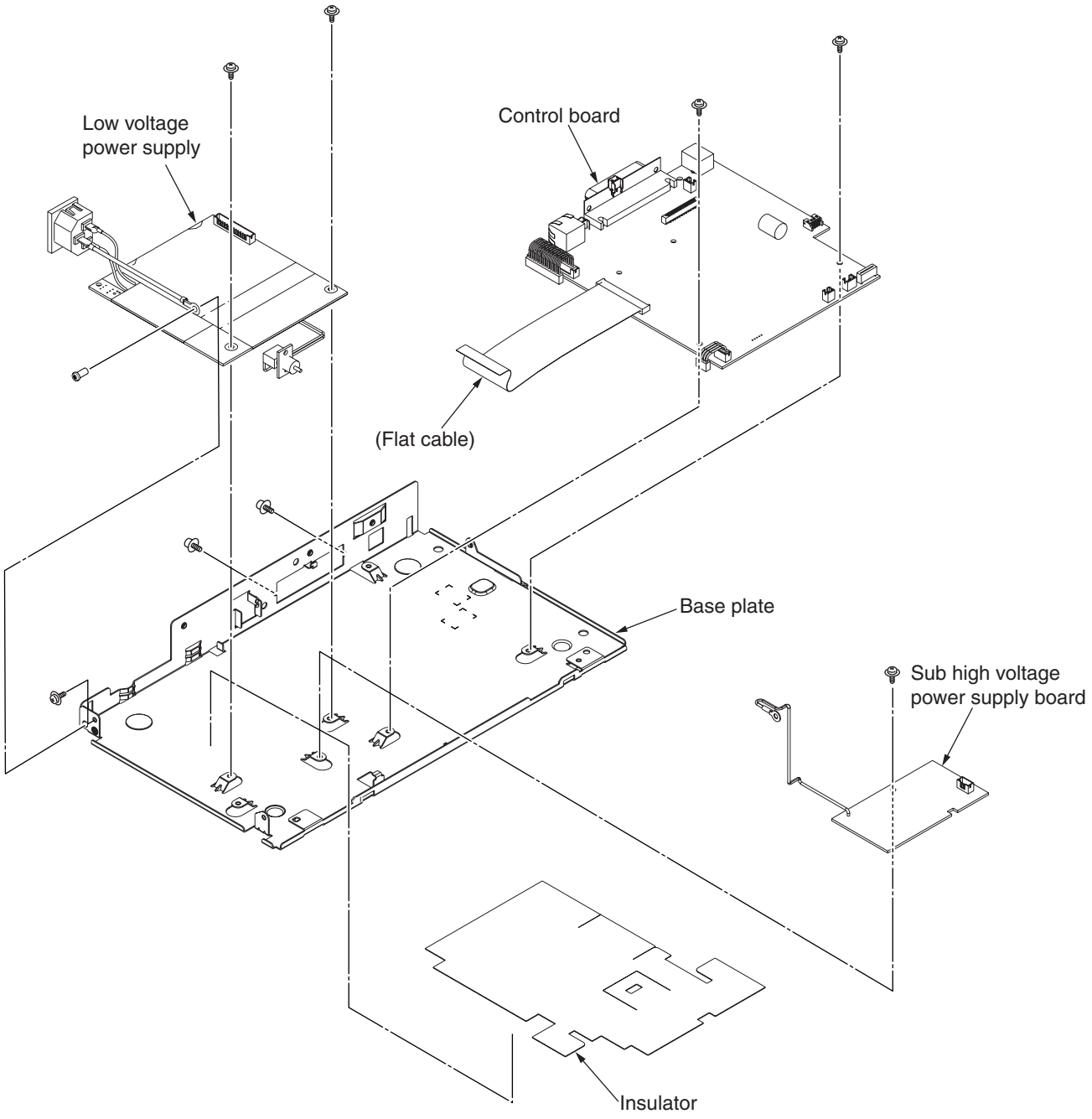


Figure 2-2

[Base unit]



Note: The flat cable from the control board is wired under the insulator.

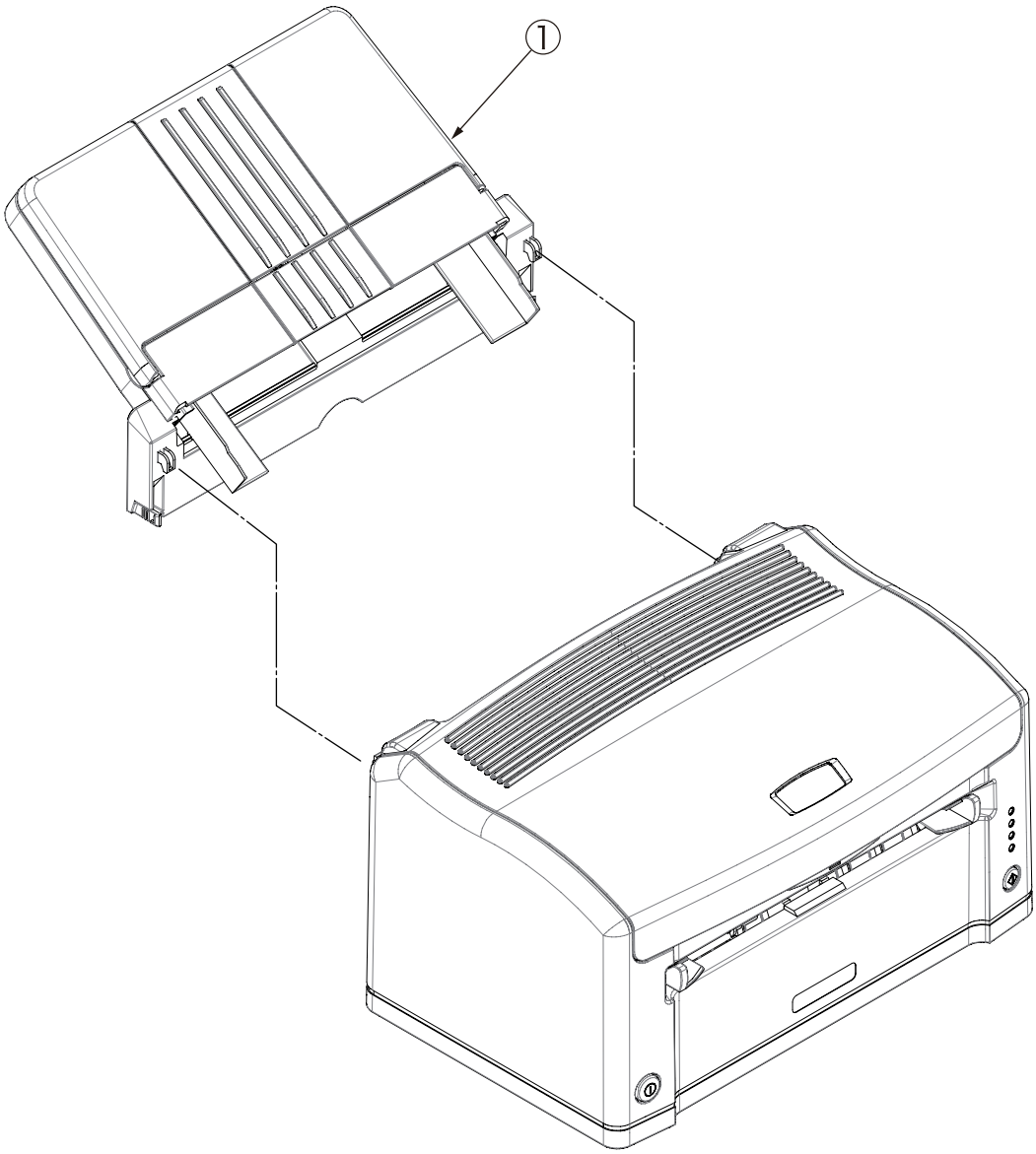
Figure 2-3

2.3 How to Change Parts

This section explains how to change parts and assemblies.

2.3.1 Paper Feeder

(1) Unlock the latches at two locations and remove the paper feeder ①.

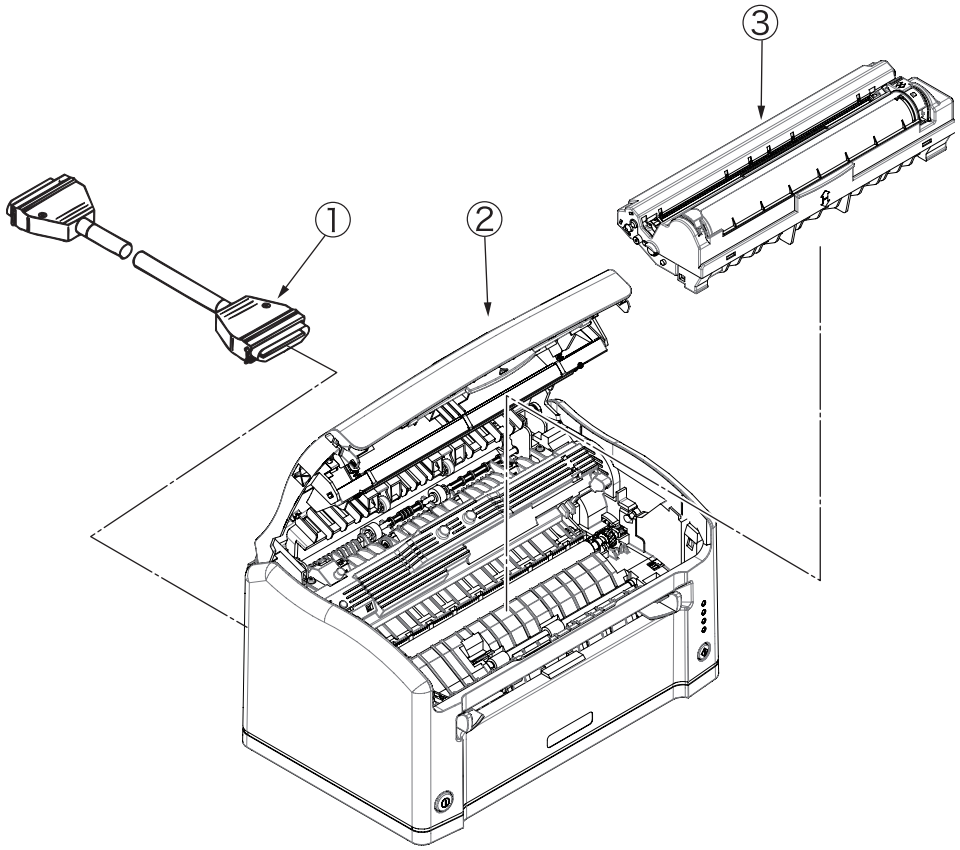


2.3.2 Cover Assy Upper

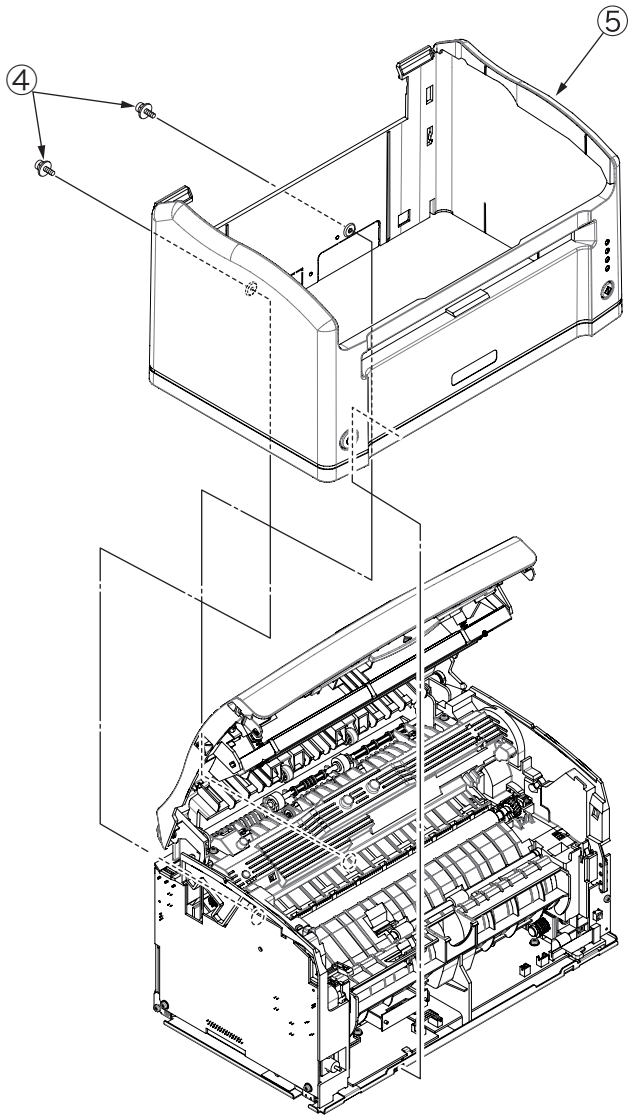
(1) With the power switch turned off, unplug the power cord from the AC outlet.

(2) Disconnect the interface cable ①.

(3) Open the cover assy top ② and remove the I/D unit ③.



(4) Remove two screws ④ and unlock the latches at two locations on the front side of the cover assy upper ⑤, and lift up and remove the cover assy upper ⑤.

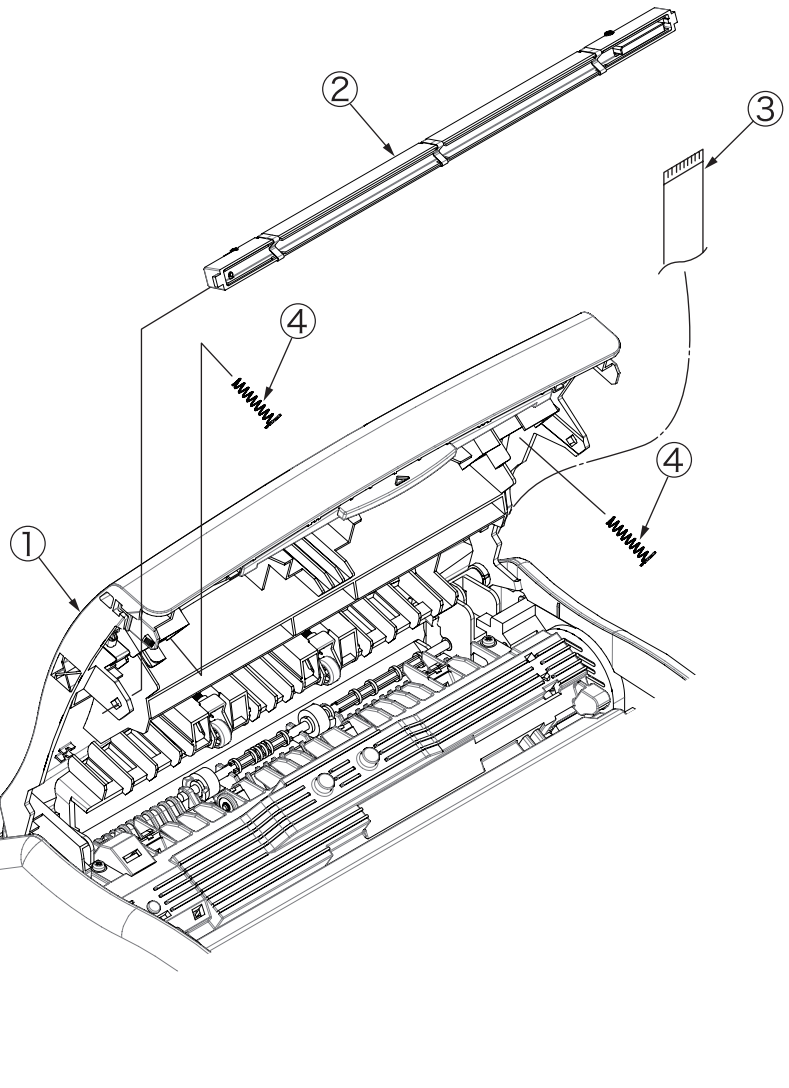


2.3.3 LED Head

(1) Open the cover assy top ①.

(2) Remove the LED head ② and then remove the flat cable ③.

(As two head springs ④ come off at that time, be careful not to lose them.)



2.3.4 Cover Assy Top

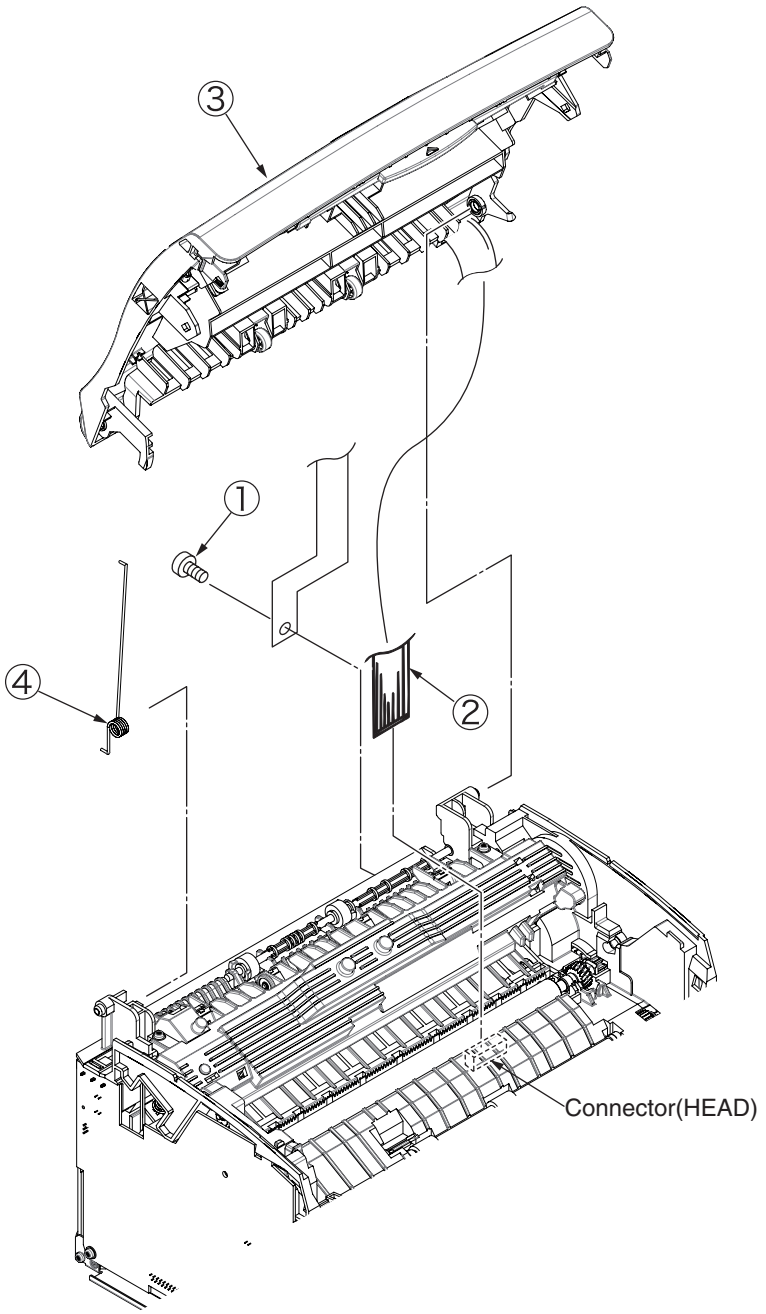
(1) Remove the paper feeder. (See 2.3.1.)

(2) Remove the cover assy upper. (See 2.3.2.)

(3) Remove the LED head. (See 2.3.3.)

(4) Remove the screw ① and then remove the flat cable ② from the connector (HEAD).

(5) Push the right clamp outward, disengage the engaging part and then also remove the left engaging part to remove the cover assy top ③.(The spring torsion ④ comes off at that time.)



2.3.5 High voltage power supply 1/Sensor board

(1) Remove the paper feeder. (See 2.3.1.)

(2) Remove the cover assy upper. (See 2.3.2.)

(3) Remove three screws ① and pull out the high voltage power supply 1/ sensor board ②.

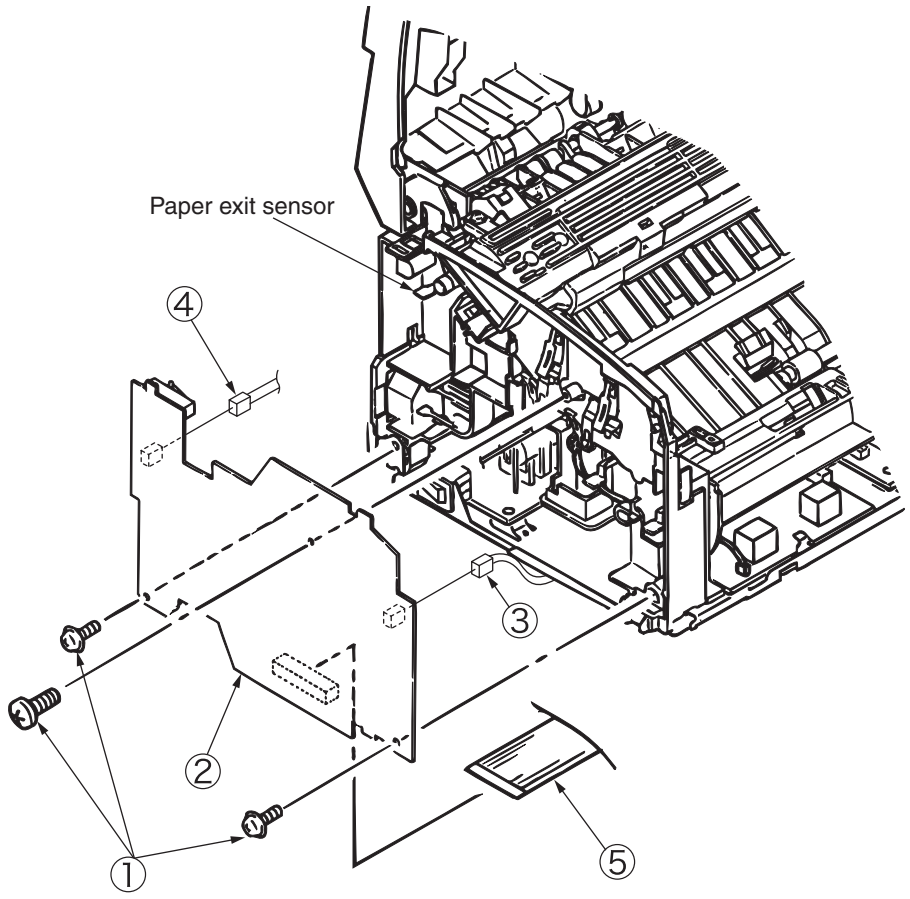
(Do not pull out the board forcedly at this time. Excess force to the cable ③, ④ may break the board ②. (See Note 1.))

(4) Remove all of the cable ③, ④, ⑤ and then remove the high voltage power suply1/ sensor board ②.

Note: When disassembling and assembling, be careful of the following.

Important:

1. When unplugging the cable ③, ④, do not add the excess force. If adding it, solder fracture in the land of connector occurs and it causes poor connection, and then extraordinary failure may occur due to the sensor signal defect.
2. Cover Assy When attaching the high voltage power supply 1/ sensor board, the cover assy top should be removed or opened.
3. When unplugging the cable ③, ④, do not add the excess force. If adding it, solder fracture in the land of connector occurs and it causes poor connection, and then extraordinary failure may occur due to the sensor signal defect.
4. For replacement of sub high voltage power supply board, see 2.3.15.



2.3.6 Flame base unit

(1) Remove the paper feeder. (See 2.3.1.)

(2) Remove the cover assy upper. (See 2.3.2.)

(3) Remove the cover assy top. (See 2.3.4.)

(4) Remove the high voltage power supply 1/ sensor board. (See 2.3.5.)

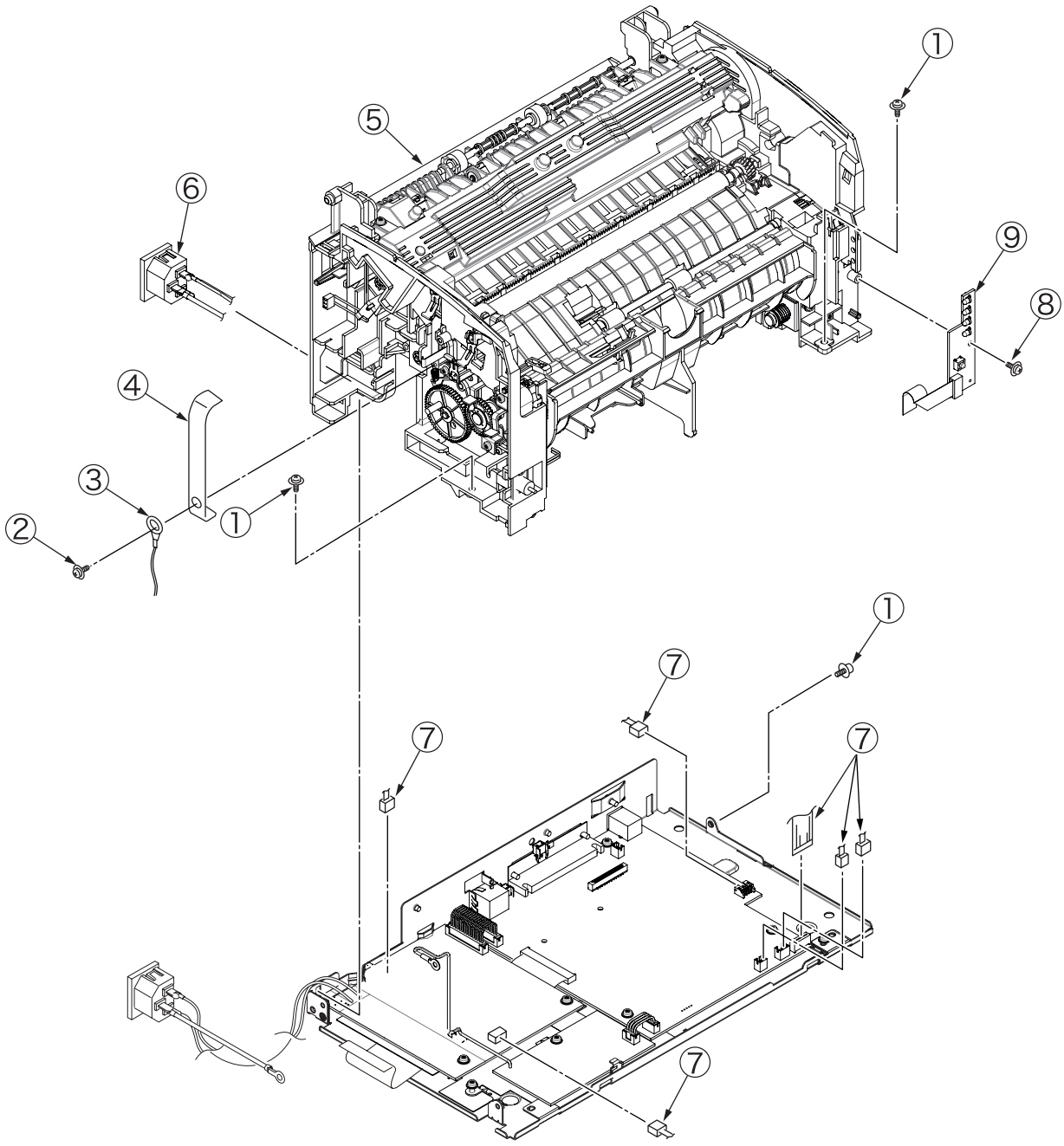
(5) Remove three screws ①.

(6) Remove the screw ② and then remove the cable ③ and the contact CB ④.

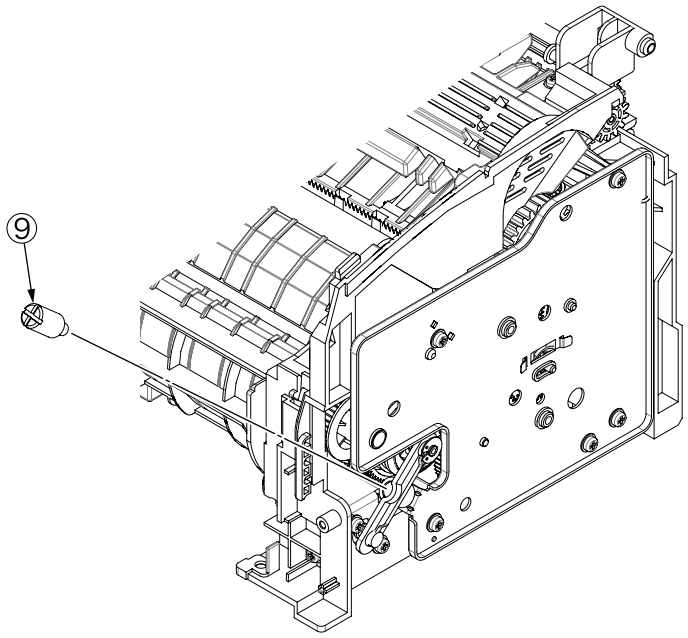
(7) Remove the inlet ⑥ of the low voltage power supply board from the frame base ⑤. When removing the inlet ⑥ from the frame base ⑤, unlock the latch of the inlet ⑥ from the frame base ⑤, using a flathead screwdriver from the side face of the frame base.

(8) Remove six cables ⑦ and disengage two engaging parts, and then remove the frame base ⑤.

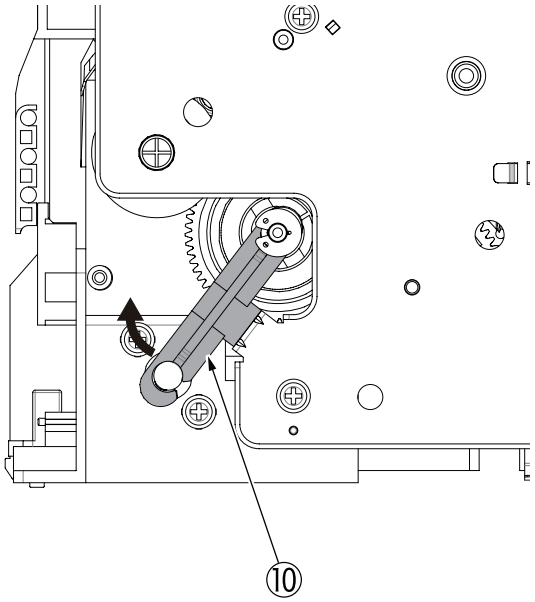
(9) Remove the screw ⑧ and then remove the LED panel board ⑨.

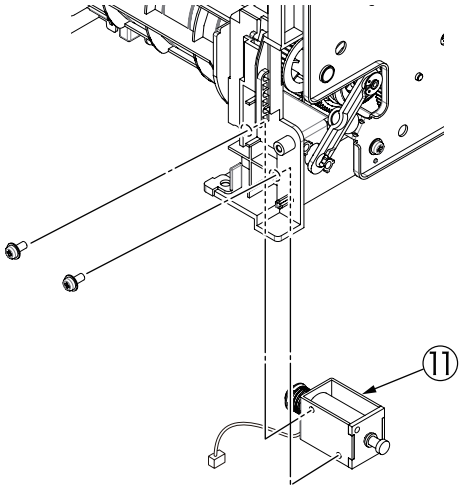


(10) Remove the solenoid shaft ⑨.

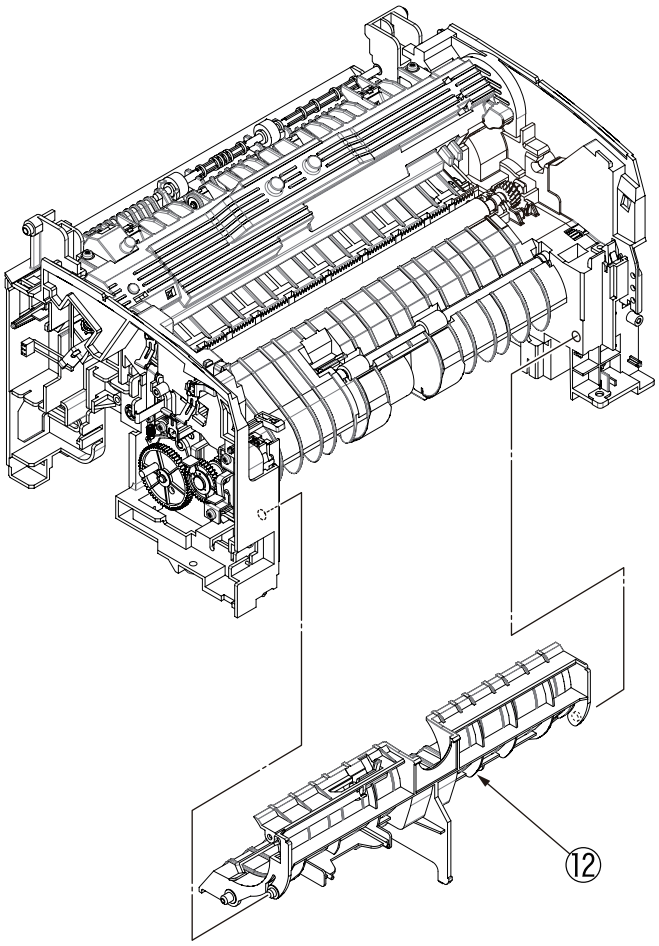


(11) Disengage the engaging parts of the solenoid lever ⑩ and solenoid ⑪ and then remove two screws and the solenoid ⑪.

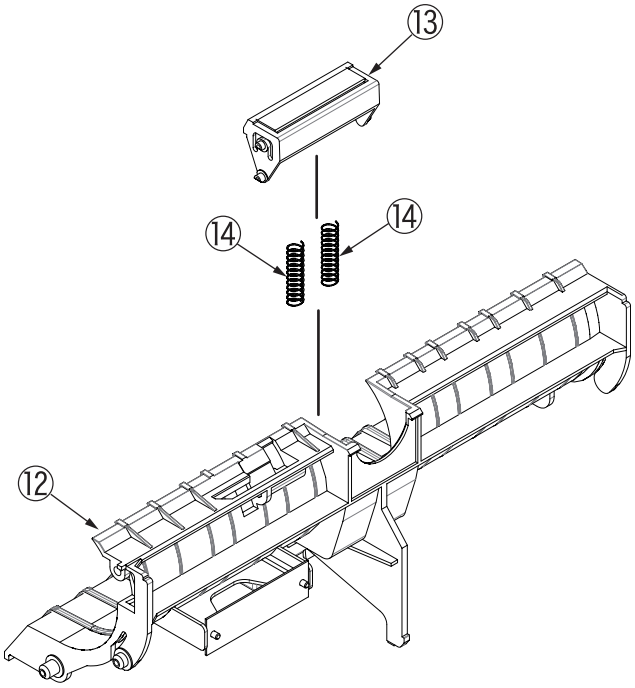




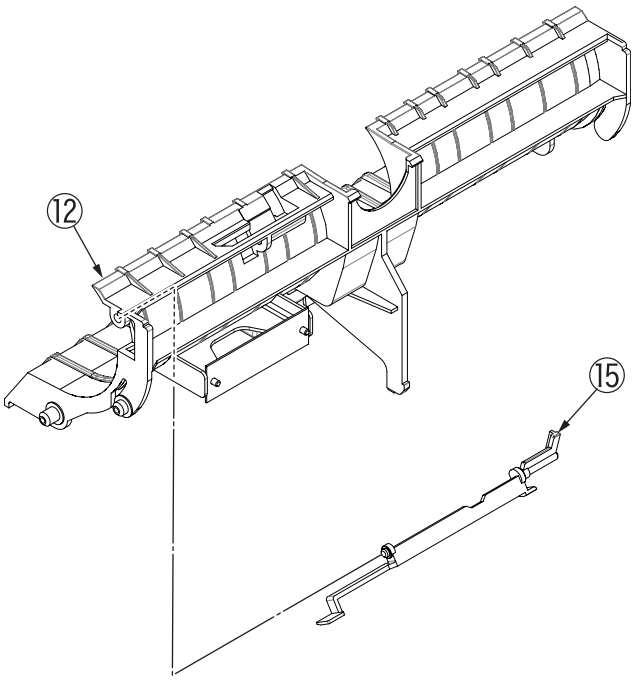
(12) Disengage two engaging parts and remove the guide-sheet ⑫.



(13) Remove the separator assy ⑬ and spring compression S ⑭.



(14) Remove the sensor paper E ⑮.



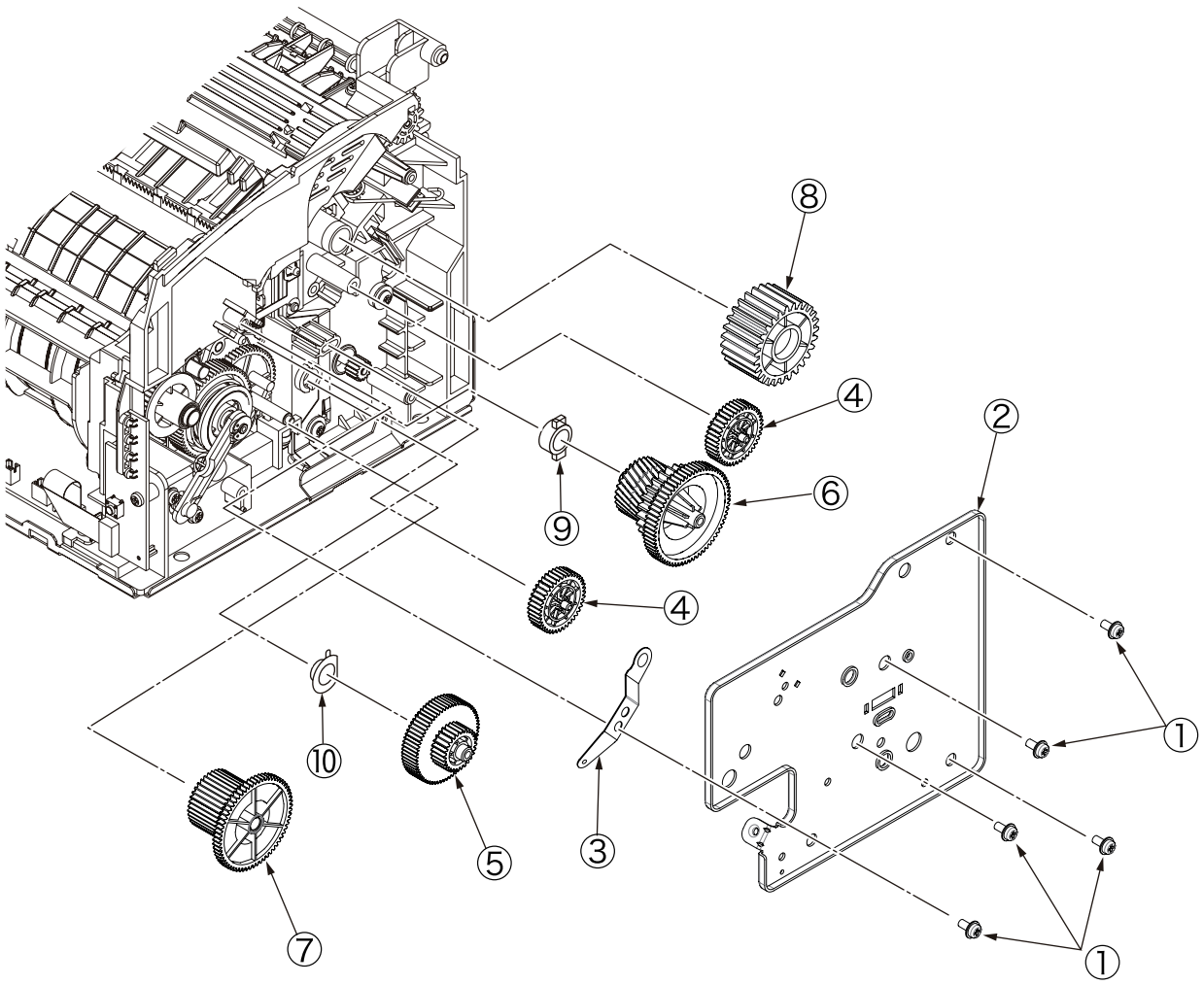
2.3.7 Plate Side M and Gear

(1) Remove the paper feeder. (See 2.3.1.)

(2) Remove the cover assy upper. (See 2.3.2.)

(3) Remove five screws ① and disengage the engaging part of the solenoid lever and then remove the plate side M ②.

(4) Remove the earth plate ③, two idle gears P ④, idle gear M ⑤, idle gear 3R ⑥, idle gear 2R ⑦, idle gear heat ⑧, registration bearing ⑨ and bearing gear ⑩.



2.3.8 Main motor

(1) Remove the paper feeder. (See 2.3.1.)

(2) Remove the cover assy upper. (See 2.3.2.)

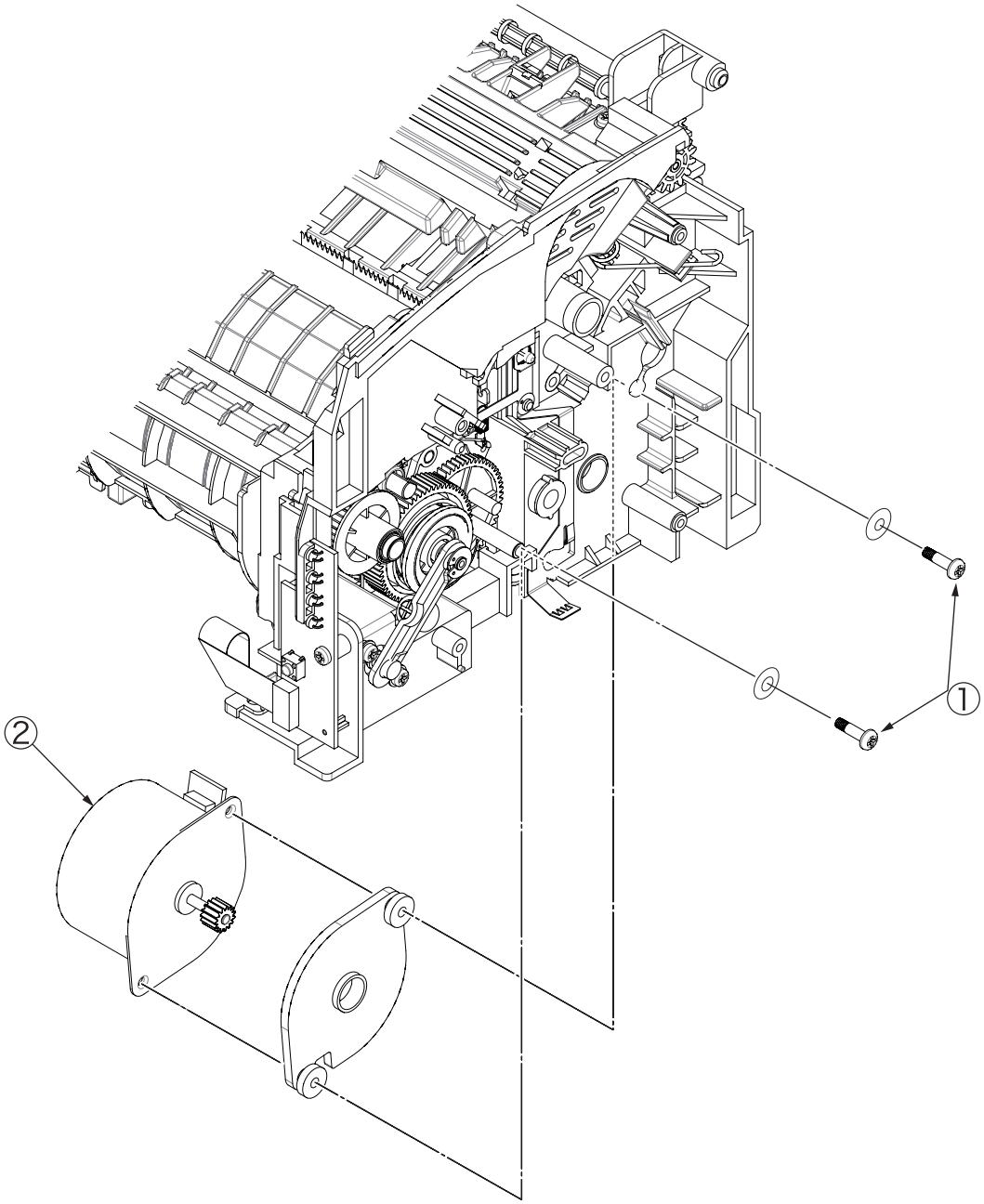
(3) Remove the cover assy top. (See 2.3.4.)

(4) Remove the high voltage power supply 1/ sensor board. (See 2.3.5.)

(5) Remove the frame base. (See 2.3.6.)

(6) Remove the plate side M. (See 2.3.7.)

(7) Remove two screws ① and then remove the main motor ②.



2.3.9 Hopping roller Assy

(1) Remove the paper feeder. (See 2.3.1.)

(2) Remove the cover assy upper. (See 2.3.2.)

(3) Remove the cover assy top. (See 2.3.4.)

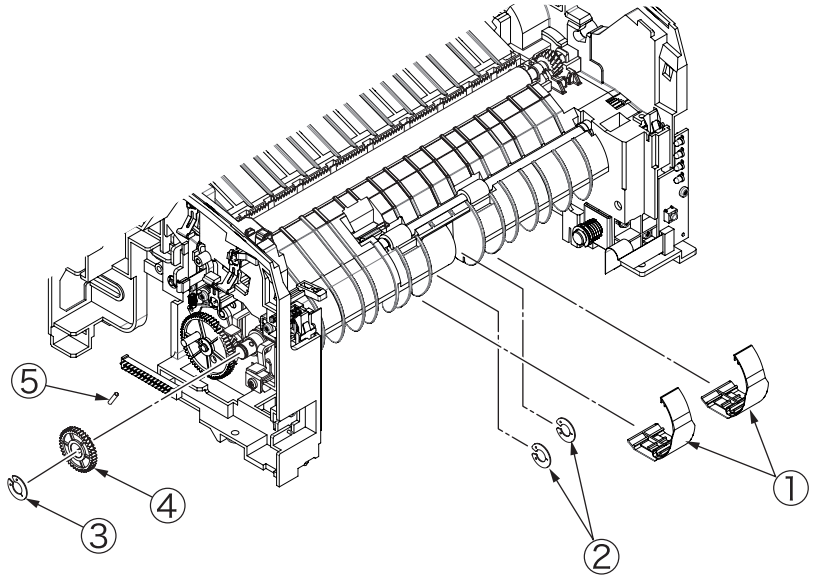
(4) Remove the high voltage power supply 1/ sensor board. (See 2.3.5.)

(5) Remove the frame base. (See 2.3.6.)

(6) Remove the guide sheet. (See 2.3.6.)

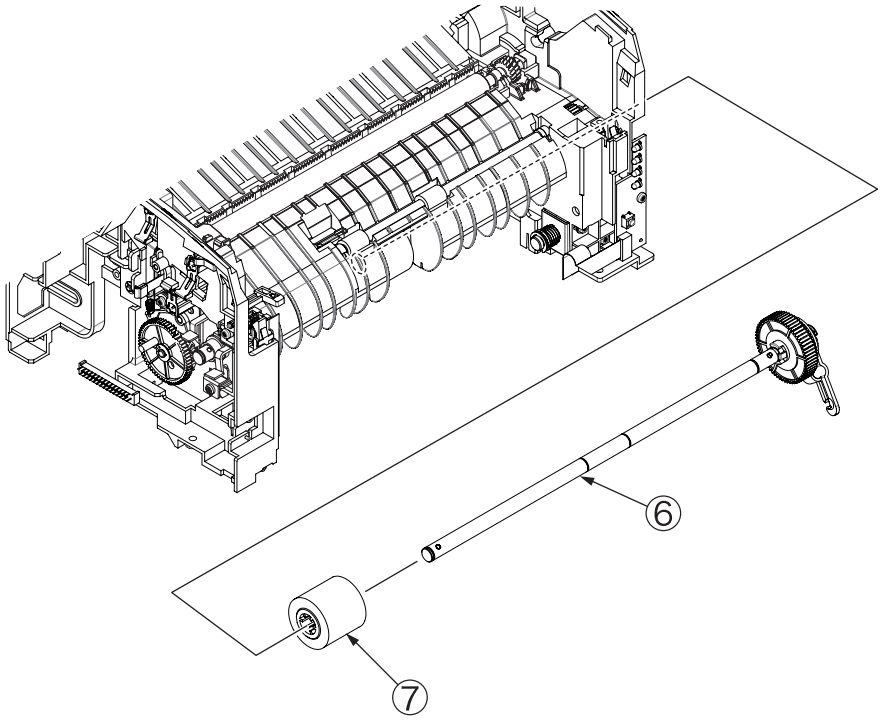
(7) Remove the plate side M. (See 2.3.7.)

(8) Remove the guide paper F ① and C-ring (ϕ7) ②.



(9) Remove the C-ring (ϕ7) ③ and gear-cam ④. As the knock pin ⑤ comes off at that time, be careful not to lose it.

(10) Pull out the shaft hopping assy ⑥ to the right side and remove the hopping roller ⑦.



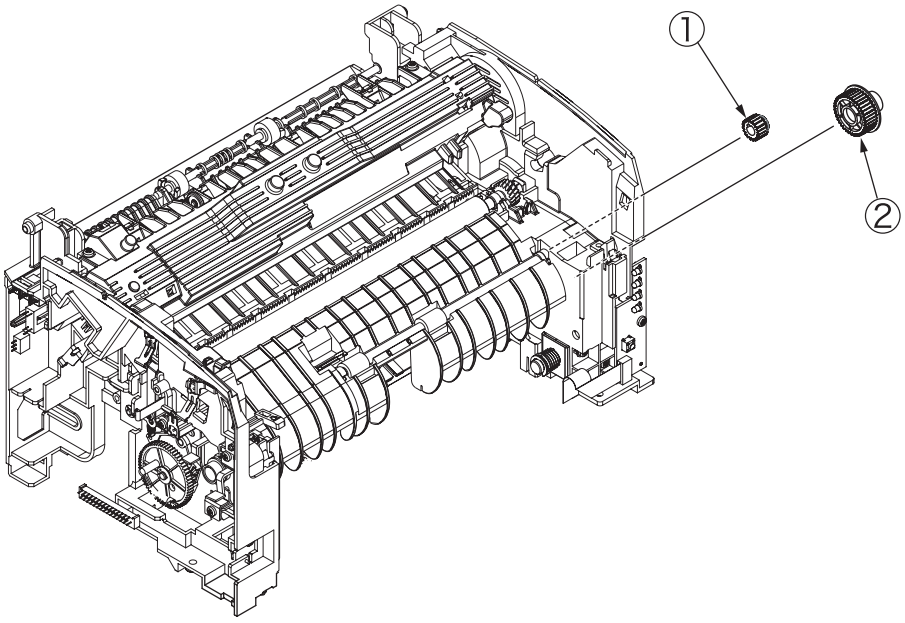
2.3.10 Registration Roller

(1) Remove the paper feeder. (See 2.3.1.)

(2) Remove the cover assy upper. (See 2.3.2.)

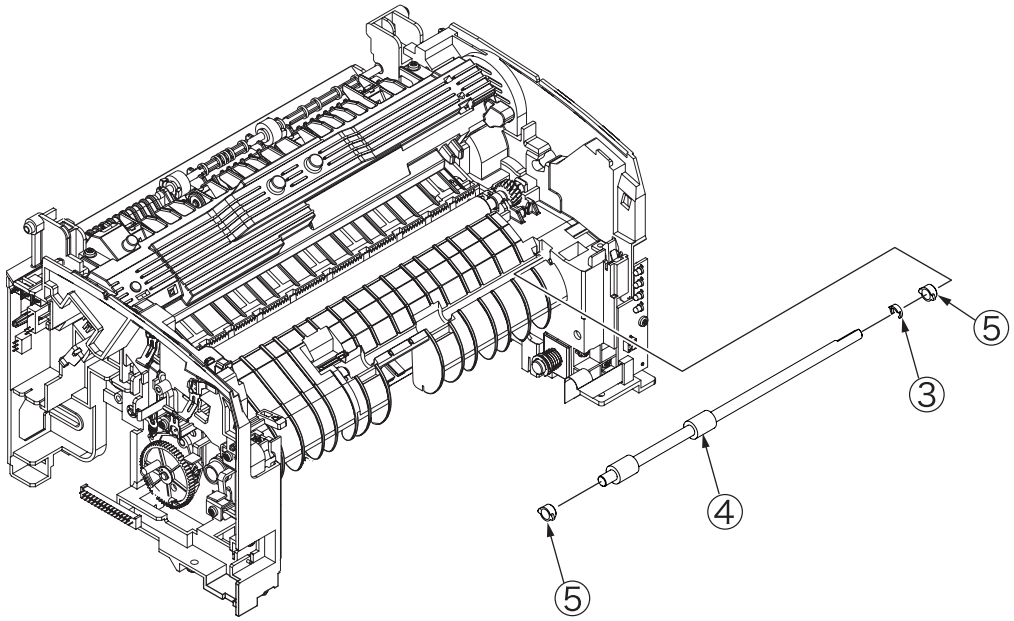
(3) Remove the cover assy top. (See 2.3.4.)

(4) Remove the plate side M and then remove the idle gear R ① and gear R ②. (See 2.3.7.)



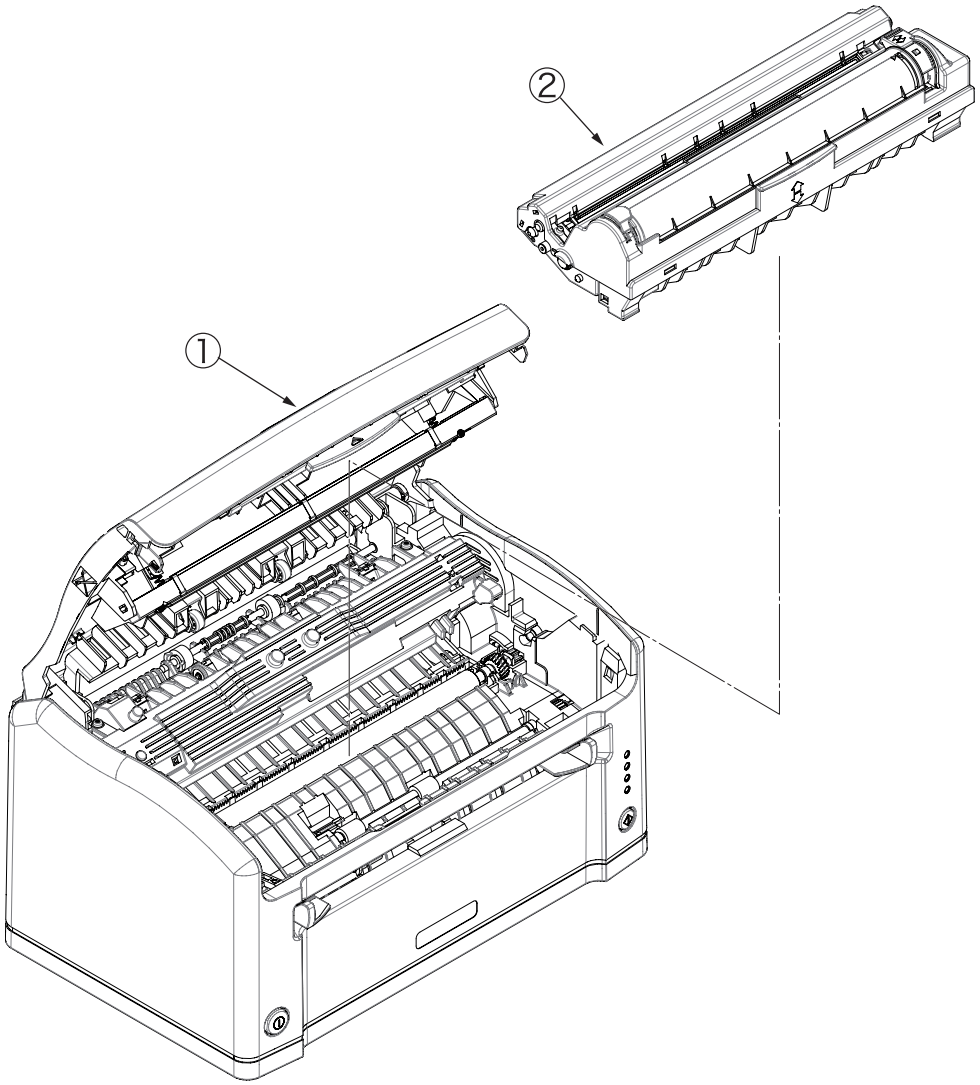
(5) Remove the washer TR ③, slide the registration roller ④ to the right and lift up the registration bearing ⑤ of the left side to remove it.

(As two registration bearings ⑤ come off at that time, be careful not to lose them.)



2.3.11 Transfer Roller Assy

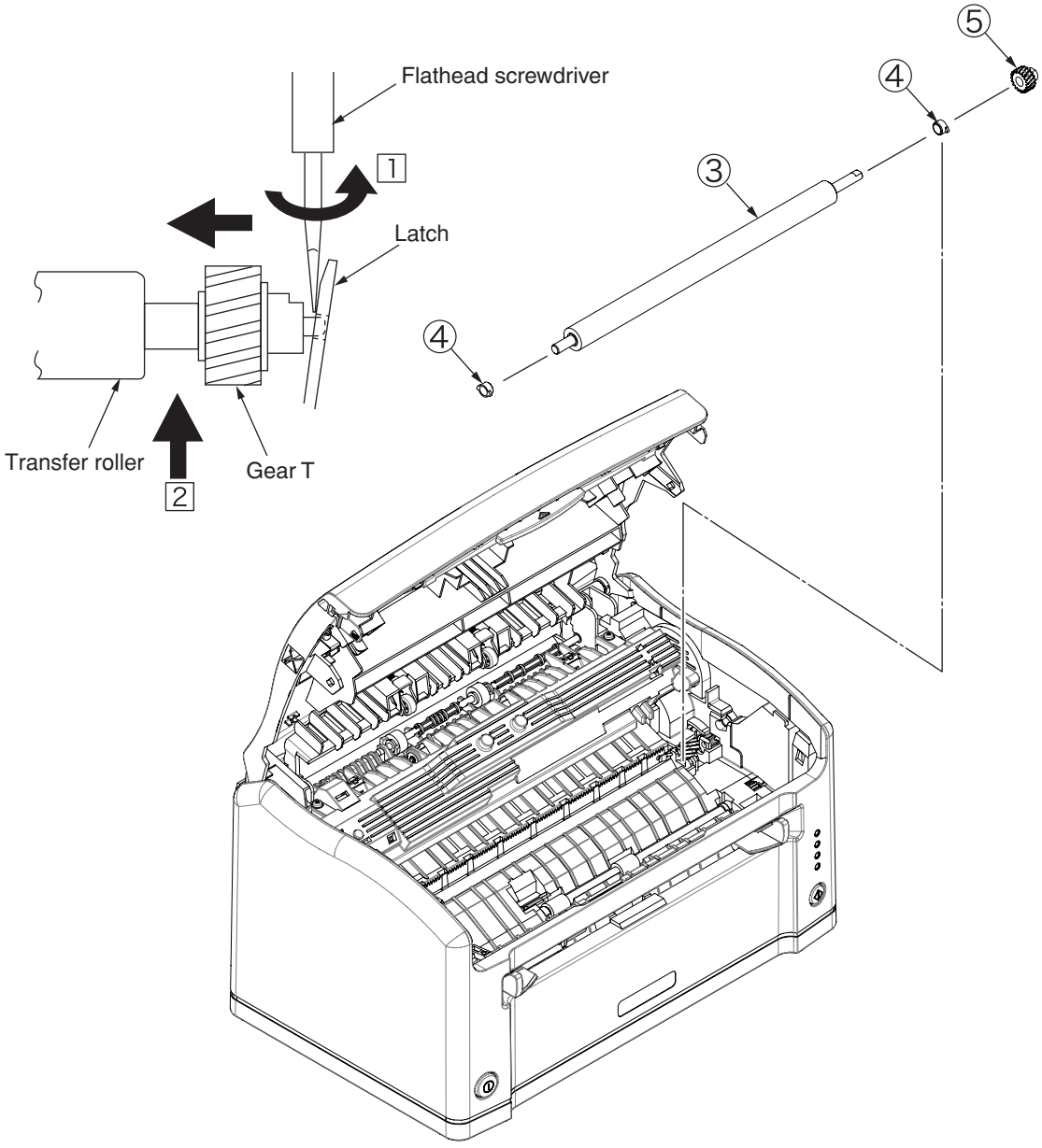
(1) Open the cover assy top ① and remove the I/D unit ②.



(2)

1 : Pressing the gear T ⑤, insert the flathead screwdriver between the latch and gear T ⑤ and turn it until touching the left side.

2 : Keeping the condition of the above 1, use the other screwdriver to lift up the shaft of transfer roller ③ and then pull out the protruding portion of gear T ⑤ from the latch hole.



2.3.12 Fuser Assy

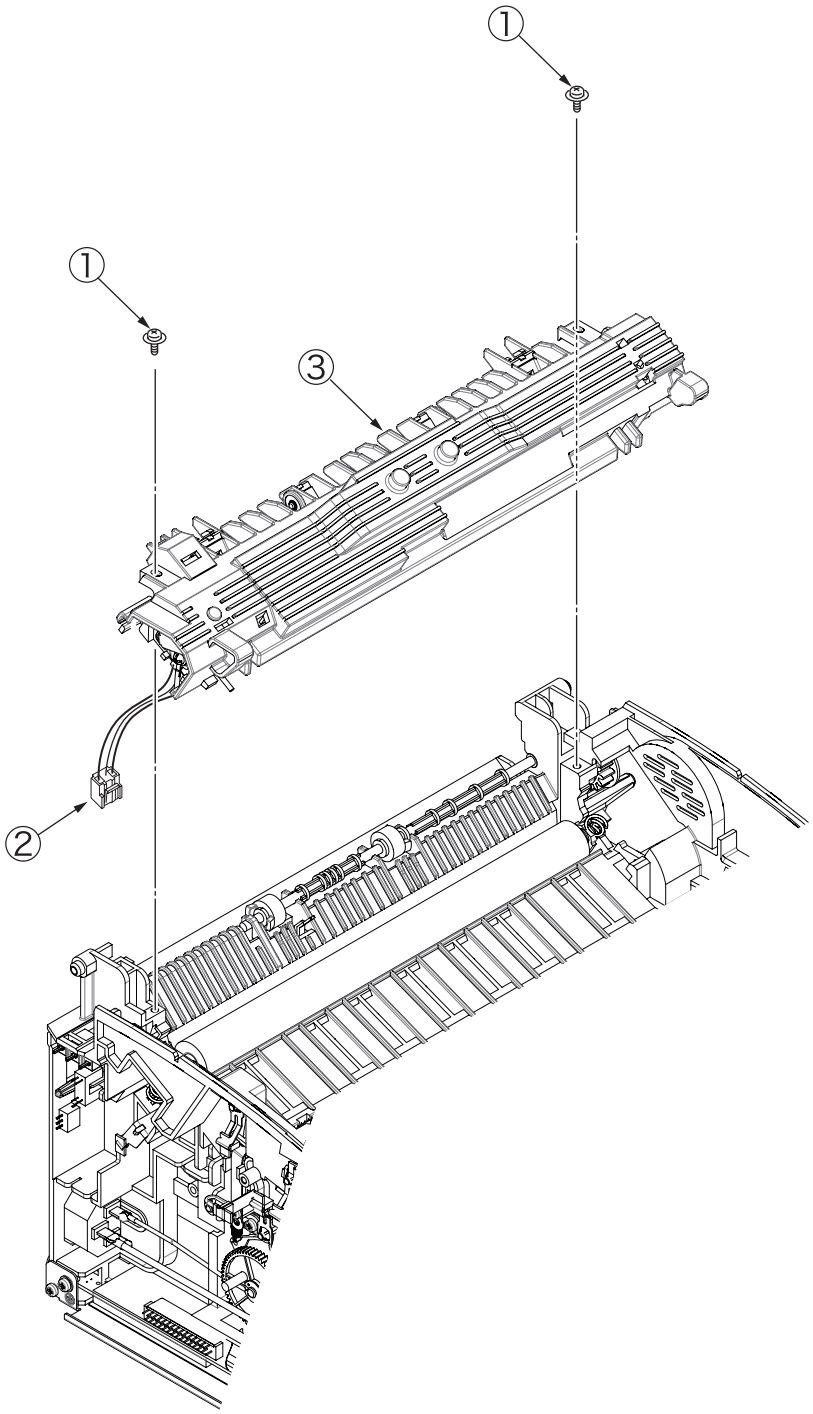
(1) Remove the paper feeder. (See 2.3.1.)

(2) Remove the cover assy upper. (See 2.3.2.)

(3) Remove the cover assy top. (See 2.3.4.)

(4) Remove the high voltage power supply 1/ sensor board. (See 2.3.5.)

(5) Remove two screws ① and connector ② and then remove the heat assy ③.
(The back up roller also comes off at this time.)



2.3.13 Back-up roller

(1) Remove the paper feeder. (See 2.3.1.)

(2) Remove the cover assy upper. (See 2.3.2.)

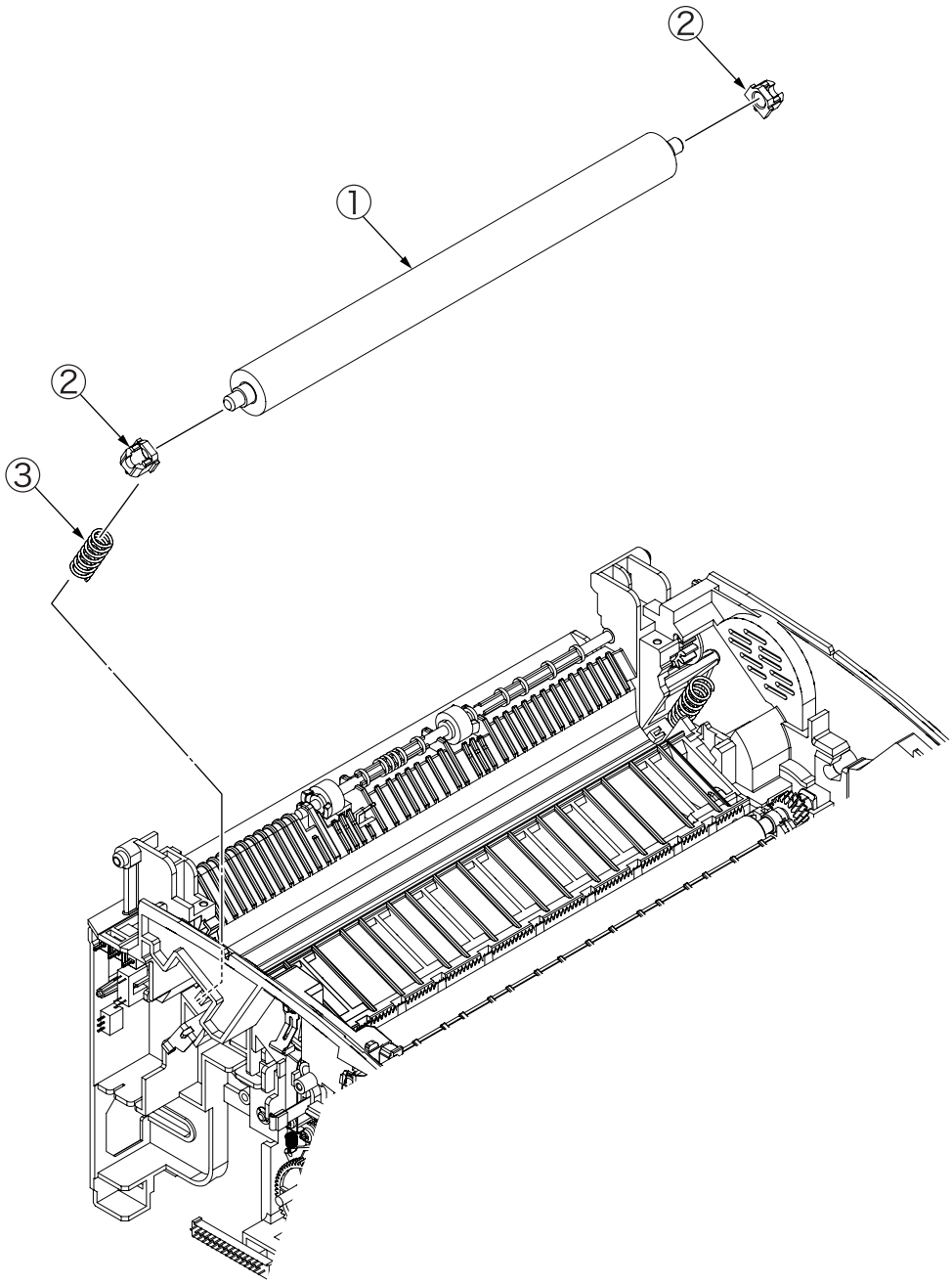
(3) Remove the cover assy top. (See 2.3.4.)

(4) Remove the high voltage power supply 1/ sensor board. (See 2.3.5.)

(5) Remove the heat assy. (See 2.3.12.)

(6) Remove the roller pressure B ①.

(Two bearings BU ② and spring pressure L ③ also come off at this time.)



2.3.14 Sensor Paper E, Sensor Paper Exit, Sensor Assy Toner

(1) Remove the paper feeder. (See 2.3.1.)

(2) Remove the cover assy upper. (See 2.3.2.)

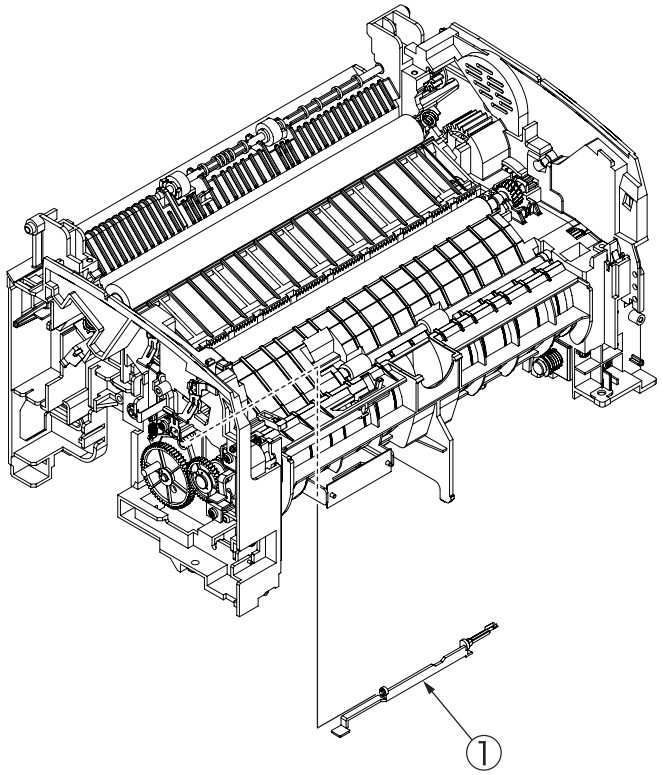
(3) Remove the cover assy top. (See 2.3.4.)

(4) Remove the high voltage power supply 1/ sensor board. (See 2.3.5.)

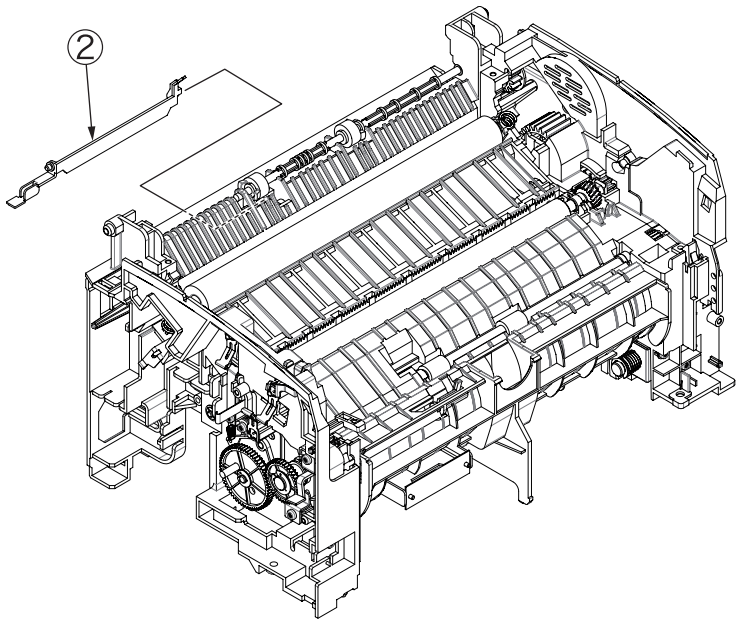
(5) Remove the frame base. (See 2.3.6.)

(6) Remove the heat assy. (See 2.3.12.)

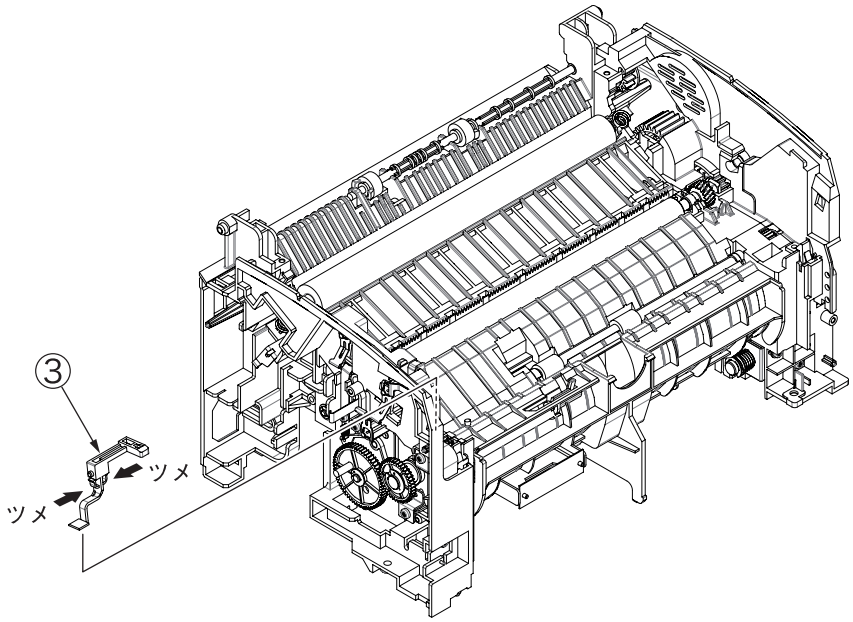
(7) Remove the sensor paper E ①.



(8) Remove the sensor paper exit ②.



(9) Bending the latch of the sensor assy toner ③ to the arrow direction, remove it.



2.3.15 Plate Base

⚠Warning	Risk of Electric Shock	⚡

There is a risk of electric shock during replacement of the low voltage power supply.

Use insulating gloves or avoid direct contact with any conducting part of the power supply, and caution should be exercised during replacement.

The capacitor may take one minute to complete discharge after the AC cord is unplugged. Also, there is a possibility that the capacitor doesn't discharge because of a breakage of the PCB, etc., so remember the possibility of electric shock to avoid electric shock.

(1) Remove the paper feeder. (See 2.3.1.)

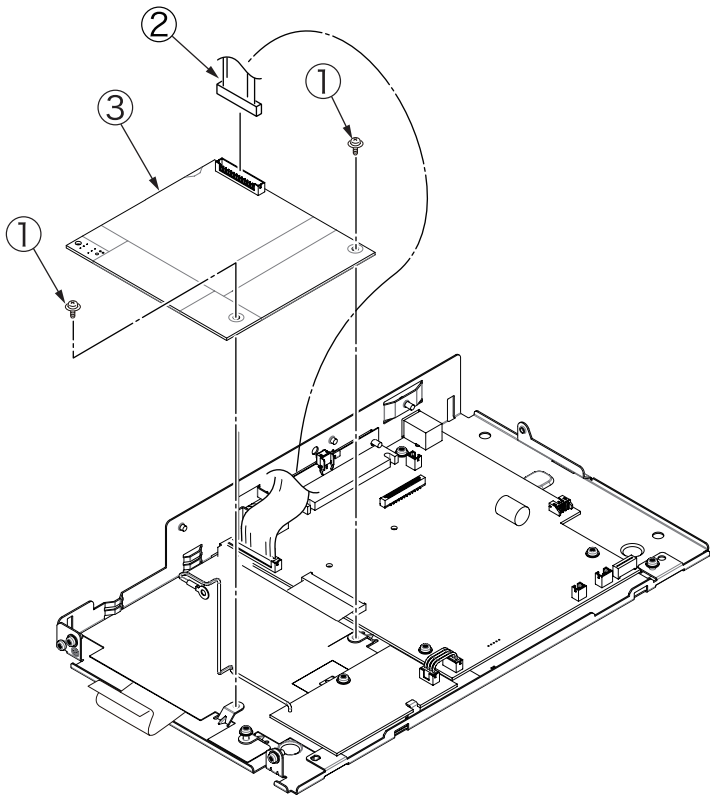
(2) Remove the cover assy upper. (See 2.3.2.)

(3) Remove the cover assy top. (See 2.3.4.)

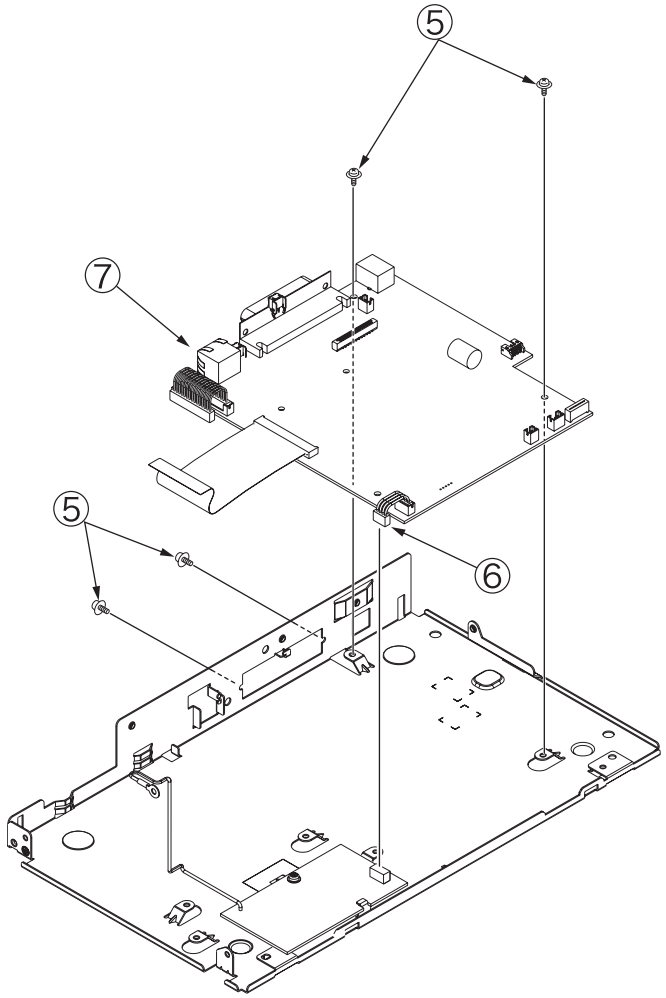
(4) Remove the high voltage power supply 1/ sensor board. (See 2.3.5.)

(5) Remove the frame base. (See 2.3.6.)

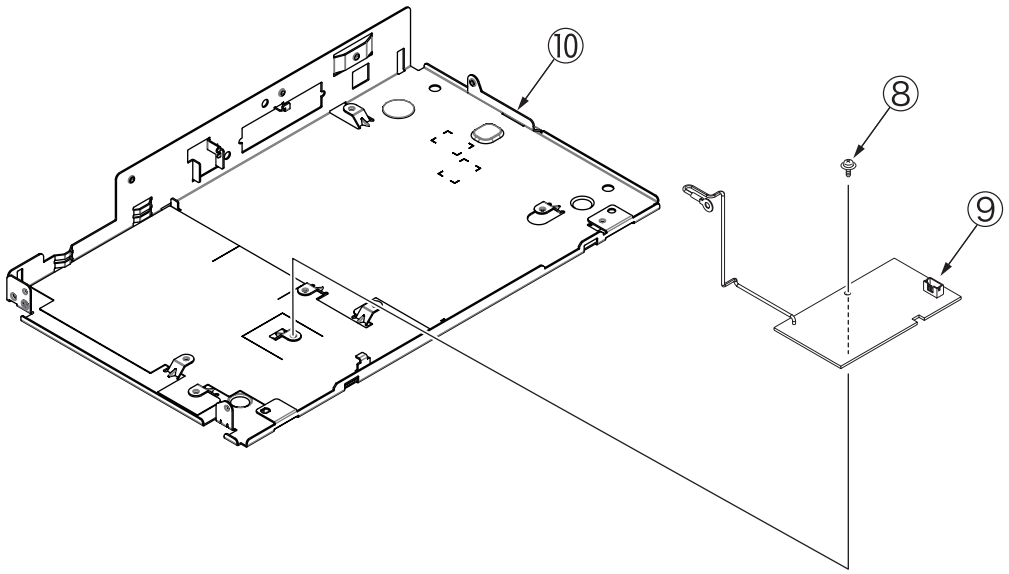
(6) Remove two screws ① and cable ② and then remove the low voltage power supply board ③.



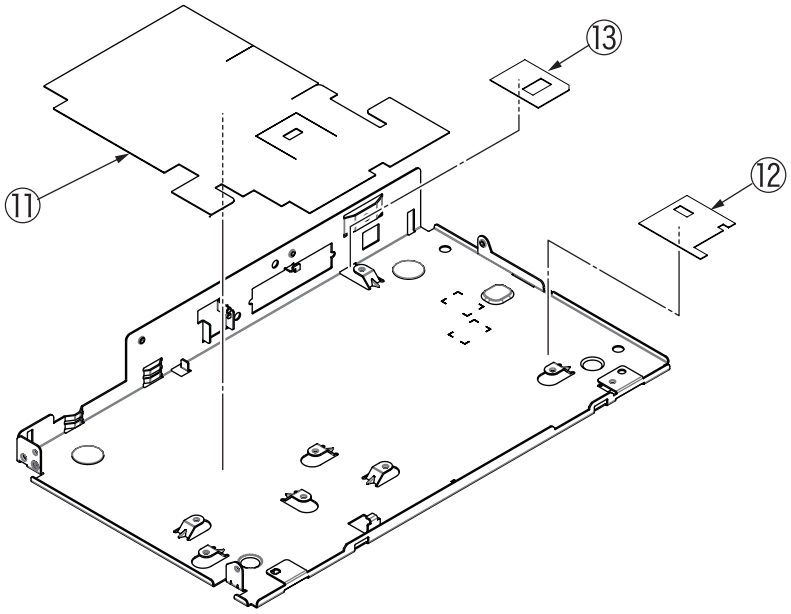
(7) Remove four screws ⑤ and cable ⑥ and then remove the control board ⑦.



(8) Remove the screw ⑧ and then remove the sub high voltage power supply board ⑨ from the base plate ⑩.



(9) Remove the insulation sheet C ⑪, ⑫, ⑬.



3. Adjustment

This chapter provides explanations on adjustments required when replacing parts. Adjustments are made by changing parameter values stored in the EEPROM on the main control board. The parameters can be set on the status monitor. This printer has three kinds of maintenance modes (menus), and it is necessary to select one of the modes when replacing any parts.

3.1 Maintenance Modes and Functions

3.1.1 User Maintenance Mode (Administrator Menu)

To view Admin MENU, select View and place a check mark for Admin Menu , which is displayed in the upper right on the Manu Setup Window on the status monitor. Select YES (Y) in the dialog “Do you want to view Admin Menu ?”

Category	Item	Value	Functions
OP MENU	ALL	ENABLE DISABLE	Sets whether to enable or disable all categories of User Menu. When set to Disable, User Menu is not displayed. The following items are not displayed if this category is disabled. This menu must be set to DISABLE to lock the panel.
	INFO.	ENABLE DISABLE	Sets whether to enable or disable the INFORMATION menu. When set to Disable, the INFORMATION menu of User Menu is not displayed.
	PRINT	ENABLE DISABLE	Sets whether to enable or disable the PRINT menu. When set to Disable, the PRINT menu of User Menu is not displayed.
	MEDIA	ENABLE DISABLE	Sets whether to enable or disable the MEDIA menu. When set to Disable, the MEDIA menu of User Menu is not displayed.
	SYS CONF	ENABLE DISABLE	Sets whether to enable or disable the SYSTEM CONFIG menu. When set to Disable, the SYSTEM CONFIG menu of User Menu is not displayed.
	PARALLEL	ENABLE DISABLE	Sets whether to enable or disable the PARALLEL menu. When set to Disable, the PARALLEL menu of User Menu is not displayed.
	USB	ENABLE DISABLE	Sets whether to enable or disable the USB menu. When set to Disable, the USB menu of User Menu is not displayed.
	NETWORK	ENABLE DISABLE	Sets whether to enable or disable the NETWORK menu. When set to Disable, the NETWORK menu of User Menu is not displayed.
	MEMORY	ENABLE DISABLE	Sets whether to enable or disable the MEMORY menu. When set to Disable, the MEMORY menu of User Menu is not displayed.
	ADJUST	ENABLE DISABLE	Sets whether to enable or disable the SYSTEM ADJUST menu. When set to Disable, the SYSTEM ADJUST menu of User Menu is not displayed.
	MAINTE	ENABLE DISABLE	Sets whether to enable or disable the MAINTENANCE menu. When set to Disable, the MAINTENANCE menu of User Menu is not displayed.
	USAGE	ENABLE DISABLE	Sets whether to enable or disable the USAGE menu. When set to Disable, the USAGE menu of User Menu is not displayed.

3.1.2 System Maintenance Mode (System Maintenance Menu)

Note: This mode is intended for use only by maintenance personnel and should be hidden from end users.

This menu is provided in a PJL file when necessary.

Values marked with an asterisk (*) are default.

Category	Item	Value	Functions
OKIUSER	OKIUSER	ODA OEL APS JP1 JPOEM1 JPOEM2 OEMA OEML	Sets a brand.JPOEM1: Japanese OEM (1), JPOEM2: Japanese OEM (2), OEMA: Overseas OEM set to A4 by default, OEML: Overseas OEM set to Letter by default Selecting a brand will automatically starts a reboot.
MAINTE MENU	FL FORMT	EXECUTE	Initializes a flash ROM forcibly. Every flash ROM installed is subject to initialization.
	EEPROM	RESET	Initializes the EEPROM. Special items, such as a MAC address, are not initialized.
CONFIG MENU	CODESET	TYPE1 * TYPE2	Sets whether to view Russian/Greek or not. TYPE1: Not view Russian/Greek. TYPE2: Views Russian/Greek. Panels supporting Russian/Greek cannot display Japanese characters. On a printer intended for use in Japan, select TYPE1 and use a conventional panel.
ENG STAT	ENG STAT	PRINT	Prints engine information.
PAGE PRT	PAGE PRT	ENABLE * DISABLE	Sets printing or not printing the total page count in PRINT MENU MAP.
DOTSHIFT	TRAY	-4.0mm 〜 -1.5mm -1.0mm -0.5mm 0.0mm +0.5mm * +1.5mm 〜 +3.5mm	Set horizontal shift of the dot position when printing from Tray 1. This area isn't initialized by the EEPROM reset operation due to upgrading of ROM version and so on.
	MANUAL	-4.0mm 〜 -0.5mm 0.0mm +0.5mm * +1.5mm 〜 +3.5mm	Set horizontal shift of the dot position when printing from the manual slot. This area isn't initialized by the EEPROM reset operation due to upgrading of ROM version and so on.
NETWORK			Details are described in the NETWORK specification.
ENG DIAG			Enters the Engine Maintenance menu.

3.1.3 Engine Maintenance Mode

This menu is provided in a PJL file when necessary.

Values marked with an asterisk (*) are default.

Category	Item	Value	Functions
LED HEAD	LED HEAD	-16 -15 ⟩ -10* +1 ⟩ +15	Sets drive time for the LED head.
STRB TIM	STRB TIM	0.50* 0.54 0.42 0.46	Sets a strobe time at 600×1200 DPI in a value relative to the strobe time at 600×600 DPI.
OPT HEAD	OPT HEAD	ODD/EVN* STEP3	Sets a type of LED head installed.
PRINTPOS	PRINTPOS	0mm +0.5mm ⟩ +3.5mm -4.0mm ⟩ -0.5mm*	Sets the print start position.
LENSHIFT	LENSHIFT	0mm* +0.5mm ⟩ +3.5mm -4.0mm ⟩ -0.5mm	Sets a value for image expansion correction (fine adjustment of the LSYNC cycle).
DRUM CNT	DRUM CNT	T nnnnnn	Indicates the Drum Count Total value. The total number of rotations of drums used in the printer, which is counted by the engine, is displayed on the LCD panel. It is displayed up to seven digits.
DRUM CNT	DRUM CNT	nnnnnn	Indicates the Drum Count value. The total number of rotations of the drum in the image drum unit in use, which is counted by the engine, is displayed on the LCD panel.
PAGE CNT	PAGE CNT	nnnnnn	Indicates the Page Count value. The total page count, which is counted by the engine, is displayed on the LCD panel.
DOT CNT	DOT CNT	T nnnnnn	Indicates the Page Dot Count value. The total number of dots after the first installation of a new toner cartridge is displayed on the LCD panel.
DOT CNT	DOT CNT	nnnnnn	Indicates the Page Dot Count value. The total number of dots after the last replacement of the toner cartridge is displayed on the LCD panel.
T1 POS	T1 POS	0mm* +1mm ⟩ +7mm -8mm ⟩ -1mm	Sets a paper feed amount from the standard tray. (Sets an amount of travel before paper stops.)
CH ADJ	CH ADJ	ENABLE* DISABLE	Sets whether to enable or disable a logical value for correcting the set voltage of CH.
SB2 ADJ	SB2 ADJ	ENABLE* DISABLE	Sets whether to enable or disable a logical value for correcting the set voltage of SB2.
CH VOLT	CH VOLT	-3 -2 -10* +1 +2 +3	Changes the default voltage of CH. (A change takes effect regardless of the setting, Enable or Disable, of a logical value for correcting the set voltage of CH.)

Values marked with an asterisk (*) are default.

Category	Item	Value	Functions
SB2 VOLT	SB2 VOLT	-3 -2 -10* +1 +2 +3	Changes the default voltage of SB2. (A change takes effect regardless of the setting, Enable or Disable, of a logical value for correcting the set voltage of SB2.)
CH V ADJ	CH V ADJ	-5 〉 -10* +1 〉 +5	A value for CH voltage correction.
CH V MAX	CH V MAX	-2 -1 0*	The maximum value for CH voltage correction.
CH V MIN	CH V MIN	-1 0* +1 +2	The minimum value for CH voltage correction.
TR1 CRNT	TR1 CRNT	-3 -2 -1 0* +1 +2 +3	Changes the current value of TR1_1 when the TR resistance is read.
ENGINE TEST	EP TEST	OFF* PAPER CONNECT	Pressing the MENU SELECT key on ENGINE TEST opens this item.This is a setting to print on a continuous form to evaluate printing in a factory. A dedicated adopter, such as a sprocket, is required to perform this menu. OFF: Standard mode PAPER: Checks for a paper jam using LP paper CONNECT: Doesn't check for a paper jam using LP paper
	PRT DUTY	1/1* 1/10 1/20 1/50	Sets a print duty for motor acceleration tests in a factory. When 1/n is set, the engine is idled for a period of time equal to an n-1 page print duty after each page is printed.
	MODE	00* 01 02 〉 FD FE FF	This item is for engine debug mode.Stores the set value in the EEPROM. The default must be "00."
ENGINE RESET			Resets every counter used in the engine. However, the page counter is reset only when its count is 500 or less. (This restriction is not applied to a reset by a PJL command.)

After a reset, the printer goes back to normal operation mode.

Note: PRINTPOS is set for shipping. DO NOT change the default setting.

3.1.4 EEPROM Initialization

The correspondence between EEPROM initialization and each event is shown in Table 3-1.

Table 3-1 EEPROM Defaults Domains

No	Event	CU EEPROM Area						PU EEPROM Area			
		Factory Default Area	User Menu Area	OP Menu Area	Administrator Menu/ System Maintenance Menu Area (*3)		F/W Revision Area	Engine Maintenance Menu Area			
						Brands Area			Drum Counter	Page Counter	Toner Dot Counter
1	User Maintenance Menu EEPROM RESET Operation	–	○	–	–	–	–	–	–	–	–
2	F/W Revision check error at the time of a power on.	–	○	–	○(*4)	–	○	–	–	–	–
3	CU EEPROM area mapping Revision check error at the time of a power on.	○	○	○	○(*4)	–	–	–	–	–	–
4	Brands area check error at the time of a power on. (*1)	○	○	○	○(*4)	○	○	–	–	–	–
5	Engine Maintenance Menu ENGINE RESET Operation	–	–	–	–	–	–	–	○	○(*2)	–
6	PU EEPROM area mapping check error at the time of a power on.	–	–	–	–	–	–	○(*3)	○	○	○
7	System Maintenance Menu EEPROM RESET Operation	–	○	○	○(*4)	–	–	–	–	–	–

(*1) A brand check is performed to make a printer operate as a model (brand) that is different from the one (brand) set in the past, and a change in brand that is made by a PJL command, the behavior at power on using a new EEPROM and so on are recognized as errors and reset.

(*2) The page counter is reset to zero (0) only when the count is 500 is or less. (ENGINE RESET by a PJL command is an exception.)

(*3) Although the DOT SHIFT setting menu exists in the system maintenance menu, the DOT SHIFT setting is not initialized even when the system maintenance menu items are initialized, because the setting value storage area is located in PU EEPROM AREA. On the contrary, when PU EEPROM AREA is initialized, the DOT SHIFT setting is also initialized.

(*4) The DOT SHIFT setting is not initialized.

3.2 Adjustments When Replacing Parts

Adjustments are required when replacing any of the following parts.

Part Replaced	Adjustment
Image drum cartridge	Reset the image drum counter. (Refer to User's manual).
Main control board	Upload/Download EEPROM data.

3.2.1 Uploading/Downloading EEPROM Data

When the printed circuit board of the controller is replaced, the contents of the old EEPROM must be copied to a new EEPROM on a new board to save customer settings. To perform this, use a maintenance utility.
The method of operating the maintenance utility, refer to Maintenance Utility Operating Manual.

The maintenance utility is designed to be used only by field engineers and should not be released to end users.

4. PERIODICAL MAINTENANCE

4.1 Periodical Replacement Parts

The parts specified below are to be replaced periodically.

Part name	Condition for replacement	Cleaning	Remarks
• Toner cartridge (Type 11)	About 2,000 sheets of paper have been printed.	• LED head	Consumables
• Image drum cartridge (Type 11)	About 10,000 sheets of paper have been printed. See 1.3 (14).		Consumables

4.2 Cleaning

Remove any toner or dust accumulated inside the printer. Clean inside and around the printer with a piece of cloth when necessary. Use the handy cleaner (service tool) to clean inside the printer.

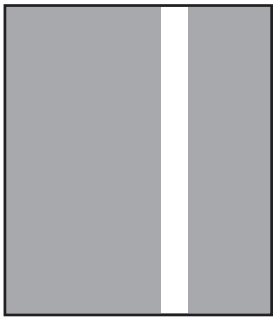
Note: Do not touch the image drum, LED lens array, or LED head connector block.

4.2.1 Cleaning of LED Lens Array

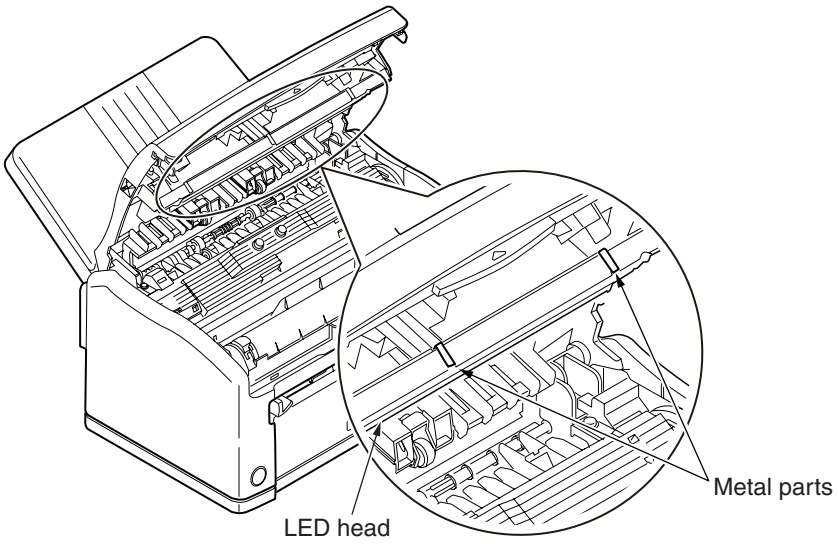
Clean the LED lens array or replace the toner cartridge when white lines or stripes (void, light printing) are generated vertically down the page, as shown below.

Note: The LED lens array must be cleaned with a soft tissue or cloth after static electricity collected on maintenance personnel is discharged.

White lines or stripes
(Void, light printing)

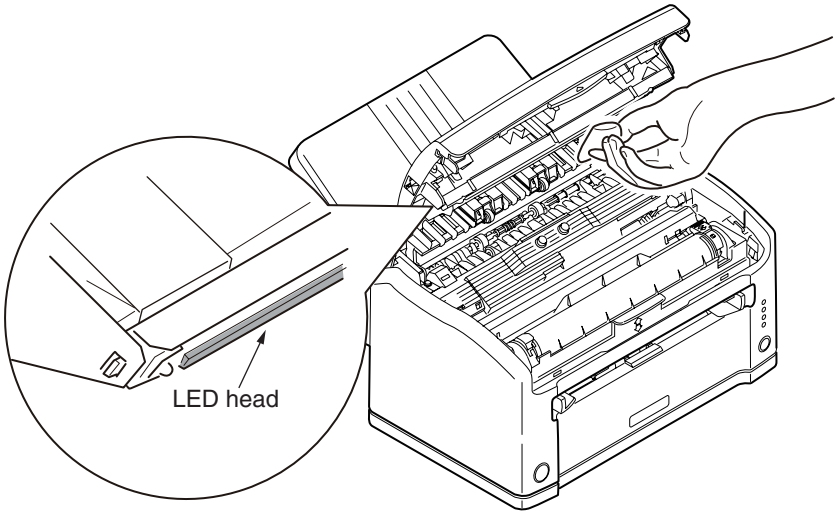


(1) Before cleaning the LED head, touch one of the metal parts of the head to discharge static electricity.



Note: To prevent any possible breakdown of the printer, be sure to discharge static electricity before cleaning the LED head.

(2) Wipe the whole LED head gently with a soft tissue or cloth.



Note: Do not use solvents such as methyl alcohol or thinner because they will damage the LED head.

4.2.2 Cleaning Page Function

This printer has a charging roller cleaning function, which can be executed by the user. To use this function, perform the following steps:

(1) Press the Online switch to take the printer offline.

(2) Press and hold down the Online switch and release it when the Manual LED starts to blink. The Status Monitor displays the message “MANUAL PAPER REQUEST” on its upper line and the message “MANUAL A4 REQUEST” or “MANUAL LETTER REQUEST” on its lower line.

(3) Insert a sheet of A4 or Letter paper into the manual feeder slot.

(4) The toner on the image drum is transferred to the paper inserted and then the paper is ejected with residual toner printed on it.
While this processing is going on, the Status Monitor displays the message “CLEANING PRINTING” on its upper line and the message “UNDER CLEANING PRINTING” on its lower line.

(5) Press the Online switch to bring the printer back online.

5. Troubleshooting Procedures

5.1 Troubleshooting Tips

(1) Read chapter 8 (for miscellaneous problems) of the user documentation of PN281.

(2) Collect as much information about the situations, where problems occurred, as possible.

(3) Inspect troubleshooting printers in situations close to those where the problems occurred.

5.2 Points to Check before Correcting Image Problems

(1) Printers are used in appropriate ambient conditions before their image problems to be corrected.

(2) Consumables (the toner cartridges and image drum cartridges) of printers are replaced properly before their image problems to be corrected.

(3) The print paper in printers with image problems to be corrected is of acceptable quality.

(4) The image drum cartridges of printers with image problems to be corrected are properly installed.

5.3 Notes on Correcting Image Problems

(1) Do not touch, or allow foreign matter to touch, image drum surfaces.

(2) Do not expose image drums to direct sunlight.

(3) The fuser units in printers become hot during the operation of the printers. Do not touch the units.

(4) Do not expose image drums to light for five or more minutes at room temperature.

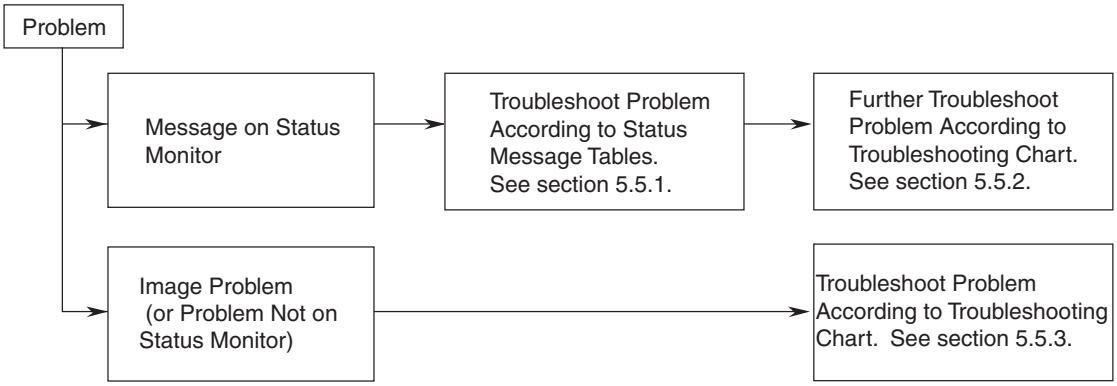
5.4 Preparation for Troubleshooting

(1) Status monitor message display

Information about problems with each printer is displayed on the status monitor for the printer. Appropriate action should be taken according to the messages on the monitor.

5.5 Troubleshooting Flow

A problem with each printer should be troubleshooted according to the following process flow:


Problem
Message on Status Monitor
Troubleshoot Problem According to Status Message Tables. See section 5.5.1.
Further Troubleshoot Problem According to Troubleshooting Chart. See section 5.5.2.
Image Problem (or Problem Not on Status Monitor)
Troubleshoot Problem According to Troubleshooting Chart. See section 5.5.3.

5.5.1 Status Message/Problem Tables

Tables 5-1 and 5-2 show the possible states of and problems with each printer that messages indicate on the status monitor for the printer.

Table 5-1 (1 of 4)

Displayed Status		Printer's LED Light			Description/Corrective Action
Status	Detail	○	🖹	⚠	
Initializing	Initializing	Off	Off	Off	The printer is initializing itself.
ONLINE	Ready to Print	On	Off	Varies in status	The printer is online, and ready to receive data.
OFFLINE	OFFLINE	Off	Off	Varies in status	The printer is offline. Press ONLINE switch to put the printer on-line to print data.
Receiving Data	Receiving Data	Blink 2	Off	Varies in status	The printer is receiving data.
Processing Data	Processing Data	Blink 2	Off	Varies in status	The printer is receiving data or processing received data.
Data Received	Data Received	Blink 1	Off	Varies in status	Received data is in the printer. The printer is waiting for data to be sent next.
Printing	Printing in progress	Blink 2	Off	Varies in status	The printer is printing data.
Printing copies	Copy printing in progress.	Varies in status	Off	Varies in status	The printer is printing two or more copies of a job. What number copy of the job is being made on the printer is on the status monitor.
Adjusting temperature	Printing will resume shortly.	Varies in status	Varies in status	Varies in status	The printer's inside temperature rose and, until it becomes appropriate, the printer keeps stopping printing.
Cancelling Job	Cancelling Job	Blink 1	Off	Varies in status	The printer is canceling received data.
Adjusting fusing temperature	Adjusting fusing temperature.	Blink 1	Varies in status	Varies in status	The printer is warming up.
Power Save Mode	Power Save Mode	Varies in status	Off	Off	The printer is in a power saving mode.
Printing Menu	Printing Menu	Blink 2	Varies in status	Varies in status	The printer is printing a menu map.
Cleaning printing	Cleaning printing	Blink 2	Varies in status	Varies in status	The printer is printing for cleaning.
Printing Font	Printing Font	Blink 2	Varies	Varies	Printing Font (B2400/B2400n Only)
Printing File List	Printing File List	Blink 2	Varies	Varies	Printing File List (B2400n Only)

Table 5-1 (2 of 4)

Displayed Status		Printer's LED Light			Description/Corrective Action
Status	Detail	○	🖹	⚠	
Network initializing	Network initializing. Please wait.	Varies in status	Varies in status	Varies in status	The printer's network is being initialized.
Cover open	The cover is open.	Off	Off	Blink 2	The printer's top cover is open. Close it.
Drum not installed	Drum cartridge is not installed properly.	Off	Off	Blink 2	The printer's image drum is not properly installed. Reinstall it.
Toner cartridge lock lever error	The position of toner cartridge lock lever is incorrect.	Off	Off	Blink 2	The printer's toner cartridge does not feed toner. Check the knob of the cartridge is in a horizontal position. Tap the cartridge.
Drum life	Drum cartridge life.	Off	Off	Blink 2	It is time the printer's image drum cartridge should be replaced. The printer is low on toner. Replace the cartridge together with the printer's toner cartridge.
Paper size error	The paper size is different from the specified size.	Off	Off	Blink 2	There is a paper size mismatch in, or multiple sheets are input at a time to, the printer. Open the printer's top cover to remove jammed paper, and replace with proper-size paper the paper loaded in the selected tray.
Paper input jam	A paper jam occured while loading paper.	Off	Off	Blink 2	The printer could not draw paper from its tray -- tttt. Open the printer's top cover to remove jammed paper.
Paper feed jam	A paper jam occured while printing.	Off	Off	Blink 2	A paper jam occurred in the printer while the printer routed paper through it. Open the printer's top cover to remove jammed paper.
Paper output jam	A paper jam occured while ejecting paper.	Off	Off	Blink 2	A paper jam occurred in the printer while the printer output paper. Open the printer's top cover to remove jammed paper.
Toner empty	Toner is empty.	Off	Off	Blink 2	Replace the printer's toner cartridge.
Toner identification error	Toner is incompatible.	Off	Off	Blink 2	The toner cartridge in the printer is improper. Install a toner cartridge intended for use in the printer.
Toner identification error	Toner cartridge is not genuine.	Off	Off	Blink 2	Install an appropriate toner cartridge.
Toner identification error	Genuine toner is recommended. Toner is not genuine.	Off	Off	Blink 2	The printer cannot recognize its toner cartridge. Install appropriate toner cartridge in the printer.
Toner incompatible	Toner is reagional mismatch.	Off	Off	Blink 2	Install an appropriate toner cartridge.
Toner cartridge not installed	There is no toner cartridge.	Off	Off	Blink 2	No toner cartridge is installed in the printer. Install a toner cartridge in the printer.
Toner sensor error	Check drum cartridge.	Off	Off	Blink 2	A toner sensor error occurred with the printer. Pull out and insert the printer's image drum cartridge.
Edit buffer overflow	Memory overflow.	Off	Off	Blink 2	The printer has insufficient memory available. Press ONLINE switch.
Manual feeder paper request	%s paper request in Manual feeder.	Varies in status	Blink 2	Varies in status	Paper is not in the printer's manual feeder tray. Load in it the paper the printer is requesting.
No paper in Tray	%s paper out in Tray.	Off	Off	Blink 2	The printer's tray -- tttt is empty of paper. Load in it the paper being on the status monitor and then press ONLINE switch.

Table 5-1 (3 of 4)

Displayed Status		Printer's LED Light			Description/Corrective Action
Status	Detail	○	🖹	⚠	
Paper size or media type mismatch in Tray	Paper size or media type in Tray does not match %s size in print data.	Off	Off	Blink 2	There is a paper size or type mismatch in the printer. Load in the selected tray the paper being on the status monitor and then press ONLINE switch.
Toner low	Toner is low.	Varies in status	Varies in status	Blink 1 or 2	The printer is low on toner. Replace the printer's toner cartridge.
Drum near end of life	Drum cartridge near end of life.	Varies in status	Off	Blink 2	It is almost time the printer's image drum cartridge should be replaced. Replace it soon together with the printer's toner cartridge.
Toner empty	Toner is empty.	Varies in status	Off	Blink 2	Replace the printer's toner cartridge.
Toner cartridge not installed	There is no toner cartridge.	Varies in status	Varies in status	Blink 2	No toner cartridge is installed in the printer. Install a toner cartridge in the printer.
Drum life	Drum cartridge life.	Varies in status	Varies in status	Blink 3	The printer's image drum cartridge is at the end of its life. Replace it together with the printer's toner cartridge.
Drum life	Drum cartridge life.	Varies in status	Varies in status	Blink 3	It is time the printer's image drum cartridge should be replaced. Replace it together with the printer's toner cartridge.
Invalid data received	Invalid data received.	Varies in status	Off	Blink 2	The printer received invalid data. Press ONLINE switch.
Non OEM Toner detected	Non OEM Toner detected	Varies in status	Off	Blink 2	The printer is not equipped with an appropriate toner cartridge, but can operate.
Toner incompatible	Toner cartridge is incompatible.	Varies	Off	Blink 2	Install an appropriate toner cartridge.
Toner identification error	Non genuine toner.	Varies in status	Off	Blink 2	The printer cannot recognize its toner cartridge. Install an appropriate toner cartridge in the printer.
Toner sensor error	Toner sensor error.	Varies in status	Varies in status	Blink 1	The printer has a problem with its toner sensor. Turn off and on the printer. Replace the printer's image drum cartridge.
Paper feeder error	Feeder's home position is not correct.	Varies in status	Varies in status	Blink 1	The home position of the printer's paper feeder home position is improper.
Error making directory	You cannot make more than 26 directories.	Varies	Varies	Blink 1	You cannot make more than 26 directories. (B2400n Only)
Volume not available	Volume not available.	Varies	Varies	Blink 1	Volume not available. (B2400n Only)
File system is full	The file system is now full.	Varies	Varies	Blink 1	The file system is now full. (B2400n Only)
File finding error	Cannot find the specified file or directory.	Varies	Varies	Blink 1	Cannot find the specified file or directory. (B2400n Only)
File descriptor error	There is no file descriptor free.	Varies	Varies	Blink 1	There is no file descriptor free. (B2400n Only)
Invalid number of bytes	Byte number invalid.	Varies	Varies	Blink1	Byte number invalid. (B2400n Only)
File making error	A file with the same name already exists.	Varies	Varies	Blink 1	A file with the same name already exists. (B2400n Only)

Table 5-1 (4 of 4)

Displayed Status		Printer's LED Light			Description/Corrective Action
Status	Detail	○	📄	⚠	
Illegal file name	Invalid file name.	Varies	Varies	Blink 1	Invalid file name. (B2400n Only)
Root directory deleting error	Root directory cannot be deleted.	Varies	Varies	Blink 1	Root directory cannot be deleted. (B2400n Only)
Directory operating error	Operation has been sent to the file handling the directory.	Varies	Varies	Blink 1	Operation has been sent to the file handling the directory. (B2400n Only)
File operating error	Operation has been sent to the directory handling the file.	Varies	Varies	Blink 1	Operation has been sent to the directory handling the file. (B2400n Only)
Different volume	The volume is different.	Varies	Varies	Blink 1	The volume is different. (B2400n Only)
Read only	Read only	Varies	Varies	Blink 1	Read only (B2400n Only)
Root directory full	Root directory full.	Varies	Varies	Blink 1	Root directory full. (B2400n Only)
Error deleting directory	The directory is not empty.	Varies	Varies	Blink 1	The directory is not empty. (B2400n Only)
Disk error	Disk error	Varies	Varies	Blink 1	Disk error (B2400n Only)
No label	No label	Varies	Varies	Blink 1	No label (B2400n Only)
Invalid parameter	Invalid parameter	Varies	Varies	Blink 1	Invalid parameter (B2400n Only)
No continuous space	There is no continuous space.	Varies	Varies	Blink 1	There is no continuous space. (B2400n Only)
Error changing directory	Root directory cannot be changed.	Varies	Varies	Blink 1	Root directory cannot be changed. (B2400n Only)
File descriptor error	The file descriptor is obsolete.	Varies	Varies	Blink 1	The file descriptor is obsolete. (B2400n Only)
Deleted	It has been deleted.	Varies	Varies	Blink 1	It has been deleted. (B2400n Only)
Block device error	There is no block device.	Varies	Varies	Blink 1	There is no block device. (B2400n Only)
Seek error	Seek error.	Varies	Varies	Blink 1	Seek error. (B2400n Only)
Internal error	Internal error.	Varies	Varies	Blink 1	Internal error. (B2400n Only)
Write only	Write only	Varies	Varies	Blink 1	Write only (B2400n Only)
File is write protected	You cannot write to a protected file.	Varies	Varies	Blink 1	You cannot write to a protected file. (B2400n Only)

Blink 1: 2 s cycle. Blink 2: 500 ms cycle. Blink 3: 120 ms cycle.

Error Code Indication

Upon an error with PN281, its Ready/Manual/Error LED starts blinking. Then, the status of the LEDs is changed every time a switch on PN281 is pressed. Each lighting pattern of the LEDs indicates an error code. The code is a three-digit decimal number, expressed using twelve bits (three LEDs x 4). With the fifth press of the switch, the LED that started blinking, i.e. turned to a blinking state, with the error returns to the blinking state.

Lighting pattern of LEDs, which indicates Error Code 123

First press			Second press			Third press			Fourth press		
●	●	●	○	●	●	○	●	●	●	○	○
1 in hundreds place			2 in tens place			3 in ones place					

Lighting pattern of LEDs, which indicates Error Code 807

First press			Second press			Third press			Fourth press		
○	●	●	●	●	●	●	●	●	○	○	○
8 in hundreds place			0 in tens place			7 in ones place					

LEDs: Ready, then Manual and the Error from left. White circle (○): On. Black circle (●): Off.

Table 5-2 (1 of 5)

LED Blink 1 (2 S cycle) Blink 2 (500 mS cycle) Blink 3 (120 mS cycle)			Description	PJL Status code	Status level/ error code
Ready	Manual	Error			
Blink 3	Blink 3	Blink 3	An error code is printed in the next MENU MAP. For LED displays of error codes, see 7.5.1 Details of error code displays.		Fatal
			CU ROM Hash Check Error 1	40057	020
			CU ROM Hash Check Error 2(Reserved)	40057	021
			CU ROM Hash Check Error 3.(Reserved)	40057	022
			<Reserve>		023~029
			CU Slot1 DIMM RAM Check Error.(Reserved)	40057	030
			CU Slot2 DIMM RAM Check Error.(Reserved)	40057	031
			CU Slot3 DIMM RAM Check Error.(Reserved)	40057	032
			CU Slot4 DIMM RAM Check Error.(Reserved)	40057	033
			RAM configuration error.	40057	034
			Slot1 RAM Spec error.	40057	035
			Slot2 RAM Spec error.(Reserved)	40057	036
			Slot3 RAM Spec error.(Reserved)	40057	037
			Slot4 RAM Spec error.(Reserved)	40057	038
			<Reserve>		039
			CU EEPROM ERROR.	40057	040
			CU FLASH ERROR.	40057	041
			FLASH FILE SYSTEM ERROR.	40057	042
			FLASH FILE SYSTEM. VERSION MISMATCH.	40057	043
			<Reserve>		044~049
			Operator Panel Error.	40057	050
			CU FAN ERROR (Reserved)	40057	051
			<Reserve>		052~059
			HOST_IF_NO_DRIVER:Centro		060
			HOST_IF_NO_DRIVER:RS232C (Reserved)		061
			HOST_IF_NO_DRIVER:USB		062
			HOST_IF_NO_DRIVER:PCI		063
			<Reserve>		064~069
			CANT_HAPPEN	40057	070
			Video overrun(Not used)		071
			Engine communication error (Reserved)	40057	072
			H/W overrun detect	40057	073

Table 5-2 (2 of 5)

LED Blink 1 (2 S cycle) Blink 2 (500 mS cycle) Blink 3 (120 mS cycle)			Description	PJL Status code	Status level/ error code
Ready	Manual	Error			
Blink 3	Blink 3	Blink 3	F/W Overrun detect	40057	074
			VIC Limiter	40057	075
			VIC decomp write error (reserved:for monochrome product only)	40057	076
			VIC illegal decomp error (reserved:for monochrome product only)	40057	077
			<Reserve>	40057	078~099
			~~Engine Program Hash Check Error~~	~~40057~~	~~100~~
			~~Engine Loader Hash Check Error~~	~~40057~~	~~101~~
			Engine RAM Error(Reserved)	40057	102
			Engine SRAM Error(Reserved)	40057	103
			Engine EEPROM Error(Reserved)	40057	104
			Engine EEPROM Missing Error(Reserved)	40057	105
			Engine Control Error	40057	106
			Engine ROM error(Reserved)	40057	107
			<Reserve>		108~119
			~~Engine Flash write Error (Loader type Miss match)~~	~~40057~~	~~110~~
			~~Engine Flash write Error (Program type Miss match)~~	~~40057~~	~~111~~
			~~Engine Flash write Error (Flash not Exist)~~	~~40057~~	~~112~~
			~~Engine Flash write Error (Toggle)~~	~~40057~~	~~113~~
			~~Engine Flash write Error (Timeout)~~	~~40057~~	~~114~~
			~~Engine Flash write Error (CRC)~~	~~40057~~	~~115~~
			PU Board Fan Motor Error(Reserved)	40057	120
			Power Supply LSI Error(Reserved)	40057	121
			Power Supply Fan Motor Error(Reserved)	40057	122
			Humidity Sensor(Reserved)	40057	123
			Temperature Sensor(Reserved)	40057	124
			Multi purpose tray home error(Reserved)	40057	125
			<Reserve>		126~128
			PAPER FEEDER ERROR	40057	129
			LED Head Over Temperature	40057	130
			LED Head Missing, Color:Yellow(Reserved)	40057	131
			LED Head Missing, Color:Magenta(Reserved)	40057	132
			LED Head Missing, Color:Cyan(Reserved)	40057	133
			LED Head Missing, Color:Black	40057	134

Table 5-2 (3 of 5)

LED Blink 1 (2 S cycle) Blink 2 (500 mS cycle) Blink 3 (120 mS cycle)			Description	PJL Status code	Status level/ error code
Ready	Manual	Error			
Blink 3	Blink 3	Blink 3	<Reserve>		135~139
			Drum Up/Down,Color:Yellow(Reserved)	40057	140
			Drum Up/Down,Color:Magenta(Reserved)	40057	141
			Drum Up/Down,Color:Cyan(Reserved)	40057	142
			Drum Up/Down,Color:Black(Reserved)	40057	143
			<Reserve>		144~149
			Drum fuse cut NG,Color:Yellow(Reserved)	40057	150
			Drum fuse cut NG,Color:Magenta(Reserved)	40057	151
			Drum fuse cut NG,Color:Cyan(Reserved)	40057	152
			Drum fuse cut NG,Color:Black(Reserved)	40057	153
			Belt unit fuse cut NG(Reserved)	40057	154
			Fuser unit fuse cut NG(Reserved)	40057	155
			<Reserve>		156~159
			Toner Sensor Error,Color:Yellow(Reserved)	40057	160
			Toner Sensor Error,Color:Magenta(Reserved)	40057	161
			Toner Sensor Error,Color:Cyan(Reserved)	40057	162
			Toner Sensor Error,Color:Black	40057	163
			<Reserve>		164~169
			Upper Thermistor, State:Short	40057	170
			Upper Thermistor, State:Open	40057	171
			Upper Heater Temp, State:High	40057	172
			Upper Heater Temp, State:Low	40057	173
			Lower Thermistor, State:Short	40057	174
			Lower Thermistor, State:Open	40057	175
			Lower Heater Temp, State:High(Reserved)	40057	176
			Lower Heater Temp, State:Low(Reserved)	40057	177
			Drive Roller over temp(Not used)	40057	178
			Fuser Mismatch(Reserved)	40057	179
			I/F Error, Loc:Envelop feeder(Reserved)	40057	180
			I/F Error, Loc:Duplex(Reserved)	40057	181
			I/F Error, Loc:Tray2(Reserved)	40057	182
			I/F Error, Loc:Tray3(Reserved)	40057	183
			I/F Error, Loc:Tray4(Reserved)	40057	184
			I/F Error, Loc:Tray5(Reserved)	40057	185
			~~I/F Error, Loc:Finisher~~	~~40057~~	~~186~~

Table 5-2 (4 of 5)

LED Blink 1 (2 S cycle) Blink 2 (500 mS cycle) Blink 3 (120 mS cycle)			Description	PJL Status code	Status level/ error code
Ready	Manual	Error			
Blink 3	Blink 3	Blink 3	I/F Error, Loc:Control Panel(Reserved)	40057	187
			<Reserve>		188~189
			System Memory Overflow	40057	190
			<Reserve>		191~199
			PU F/W download check SUM error(Reserved)	40057	200
			PU F/W Flash write error(Reserved)	40057	201
			PU F/W Flash data missing(Reserved)	40057	202
			IMAGE ACK illegal page ID	40057	203
			IMAGE SET Trans error(Reserved)	40057	204
			No page at DUP IN(Reserved)	40057	205
			No page at PPOUT	40057	206
			Illegal function call	40057	207
			Parameter error	40057	208
			(Reserved)		209
			EM Null page cargo	40057	210
			EM Null page	40057	211
			EM No video queue	40057	212
			EM Illegal sequence	40057	213
			<Reserve>		214~229
			<Reserve>		214~229
			TONER Reader not installed		230
			TONER Reader I/F Error		231
			<Reserve>		232~299
			An error code is printed in the next MENU MAP. Depending on the error type, address information is also printed. For LED displays of error codes, see 7.5.1 Details of error code displays.		Fatal
			Machine check Exception	40057	001
			DSI Exception	40057	002
			ISI Exception	40057	003
			Alignment Exception	40057	004
			Program Exception	40057	005
			Floating-point unavailable Exception	40057	006
			Instruction address breakpoint Exception	40057	007
			Thermal management interrupt Exception	40057	008

Table 5-2 (5 of 5)

LED Blink 1 (2 S cycle) Blink 2 (500 mS cycle) Blink 3 (120 mS cycle)			Description	PJL Status code	Status level/ error code
Ready	Manual	Error			
Blink 3	Blink 3	Blink 3	Instruction TLB miss	40057	009
			Data TLB load miss	40057	010
			Data TLB store miss	40057	011
			<Reserve>		012~019

5.5.2 Message Troubleshooting

When none of the message/problem tables provided in the above section can work for a problem with a printer, any of the troubleshooting flow charts shown below should be followed to solve the problem.

No.	Problem	Flow Chart Number
1	Printer does not operate normally after it is turned on	①
2	Jam alarm ├─Paper input jam ├─Paper feed jam └─Paper output jam	 ②-1 ②-2 ②-3
3	Paper size error	③
4	Fuser unit error	④

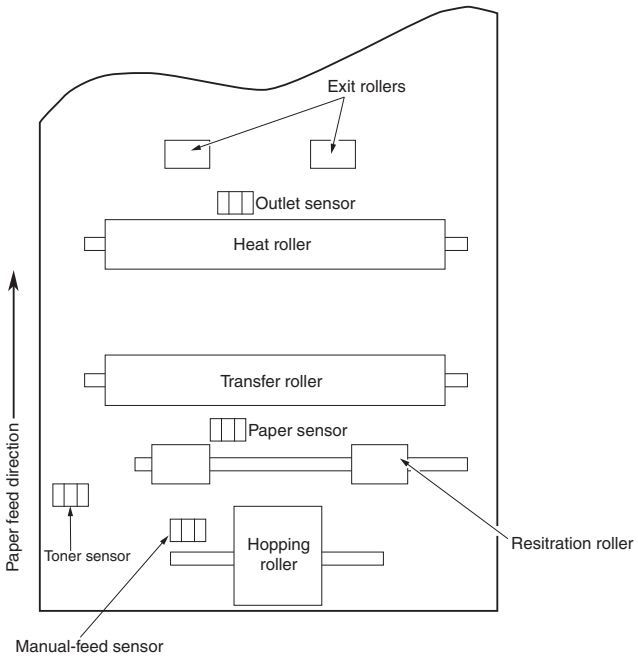
① Printer does not operate normally after it is turned on

- Turn off and on the printer.
- After the power light turns on, do the other three lights turn on and off once and does the main motor start running?
  - No — Is the AC cord connected properly?
    - No — Connect it properly.
  - Yes — Are the cable between the main board and the low-voltage power supply connected properly?
    - No — Connect the cable properly.
  - Yes — Is +5 V supplied to the main board (check the voltages at the pins 3 and 2 of the CN18 connector)?
    - No — Aren't the +5 V and GND on the main board short-circuited (check the voltages at the pins 3 and 2 of the CN18 connector)?
      - No — Replace the low-voltage power supply.
    - Yes — Replace the board.
  - Yes — Is the flexible cable of the operator panel Assy. connected to the CN9 connector of the board and the CN1 connector of the operator panel board properly?
    - No — Connect the cable properly.
  - Yes — Replace the Assy. or cable.
  - Did this step work?
    - No — Replace the main board.
  - Yes — End
- Yes — Does the Ready light stay on?
  - No — Replace the main board.
- Yes — Is there a connection error with the status monitor?
  - No — Take proper corrective action for the problem according to status message/problem tables (see section 5.5.1 for taking proper corrective action).
- Yes — End

Jam alarm

②-1 Paper input jam

- Does a paper jam error occur in the printer when the printer is turned on?
  - Yes Remove the paper.
    - Yes Remove the paper.
  - No Does the paper sensor plate function normally (does it move freely when it is touched)?
    - No Replace it.
  - Yes Clean the paper sensor on the high-voltage power supply-1/sensor board or replace the board
- No Does the printer issue a jam alarm after paper is input to the printer?
  - Yes Is paper sent to the paper sensor plate?
    - Yes Does the plate function normally (does it move freely when it is touched)?
      - No Replace it.
    - Yes Clean the paper sensor on the high-voltage power supply-1/sensor board or replace the board.
  - No Replace the hopping roller or the paper cassette that is to input paper.
- No Does the hopping roller turn?
  - Yes Install properly the paper tray that is to input paper.
- No Does the hopping clutch operate properly?
  - Yes Replace the boss and shaft of the hopping roller assembly.
- No Is the CN4 connector of the main board connected properly?
  - No Connect the connector properly.
- Yes Is the coil resistance of the hopping clutch (that is normally about 144 ohms between the pins 1 and 2) proper?
  - No Replace the clutch.
- Yes Replace the main board.



Jam alarm

②-2 Paper feed jam

- Does a paper jam error occur in the printer when the printer is turned on?
  - Yes — Is there paper on the paper sensor plate?
    - Yes — Remove the paper.
  - No — Does the plate function properly (does it move freely when it is touched)?
    - No — Replace it.
  - Yes — Replace the high-voltage power supply-1/sensor board.
- No — Does paper reach the paper sensor plate?
  - No — Does the hopping roller turn?
    - No — Check the hopping roller assembly, the trays or the hopping clutch.
  - Yes — Is the image drum cartridge installed properly?
    - No — Install it properly.
- Yes — Does paper reach the outlet sensor plate?
  - Yes — Does the plate function properly (does it move freely when it is touched)?
    - No — Replace it.
  - Yes — Clean the outlet sensor on the high-voltage power supply-1/sensor board or replace the board.
- No — Does the main drum motor turn?
  - No — Is the CN6 connector of the main board connected properly?
    - No — Connect it properly.
  - Yes — Replace the motor or the main board.
- Yes — Does the transfer roller turn?
  - No — Check the gears (the transfer roller gear and the drum gear that is on the left of the image drum cartridge).
- Yes — Is the fuser Assy. installed properly?
  - No — Install it properly.
- Yes — Is the image drum cartridge installed properly?
  - No — Install it properly.
- Yes — Clean the paper sensor on the high-voltage power supply-1/sensor board or replace the board.

Jam alarm

②-3 Paper output jam

- Does a paper output jam occur in the printer when the printer is turned on?
  - Yes Is there paper on the outlet sensor plate?
    - Yes Remove the paper.
  - No Does the outlet sensor plate function properly (does it move freely when it is touched)?
    - No Replace it.
  - Yes Clean the outlet sensor on the high-voltage power supply-1/sensor board or replace the board.
- No Replace the exit rollers.

③ Paper size error

- Is print paper of a specified size used in the printer?
  - No Use print paper of a specified size in the printer.
- Yes Does the paper sensor plate function properly (does it move freely when it is touched)?
  - No Replace it or clean the paper sensor on the high-voltage power supply-1/sensor board.
- Yes Does the outlet sensor plate function properly (does it move freely when it is touched)?
  - No Replace it or clean the outlet sensor on the high-voltage power supply-1/sensor board.
- Yes Replace the high-voltage power supply-1/sensor board.

④ Fuser Assy. - error 170, 171 172 or 173

- Is the thermistor connector inserted into the CN2 connector of the high-voltage power supply-1/sensor board properly?
  - No Insert the thermistor connector into the CN2 connector properly.
- Yes Is the heat connector inserted into the CN202 connector of the low-voltage power supply properly?
  - No Insert the heat connector into the CN202 connector properly.
- Yes Does the heater turn on when the printer is turned on?
  - No Replace the fuser Assy., the low-voltage power supply or the main board.
- Yes Replace the fuser Assy. or the main board.

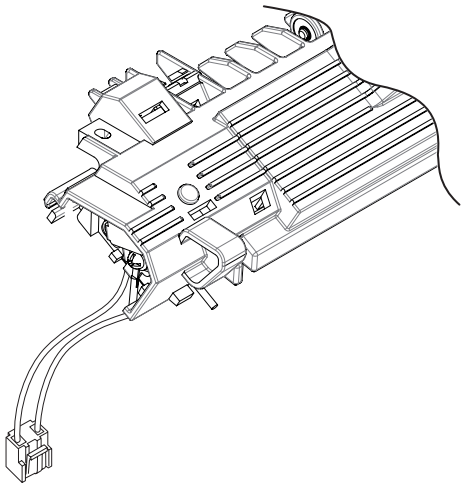
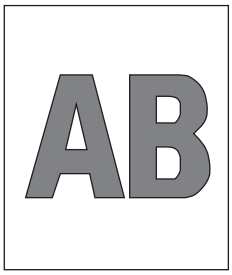


Figure 5-1

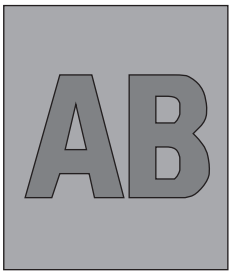
5.5.3 Image Troubleshooting

The procedures for troubleshooting image problems are described below. Figure 5-2 shows typical image problems.

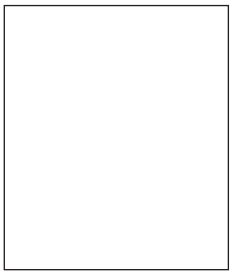
Problem	Flow Chart Number
Light or entirely-faded image <figure 5-2 Ⓐ>	①
Dirty background <figure 5-2 Ⓑ>	②
Blank paper <figure 5-2 Ⓒ>	③
Vertical black belt/line <figure 5-2 Ⓓ>	④
Periodic pattern <figure 5-2 Ⓔ>	⑤
Void (transfer error)	⑥
Poor fusing (text or image blurs or comes off when touched with hand)	⑦
Vertical white belt/line <figure 5-2 Ⓕ>	⑧



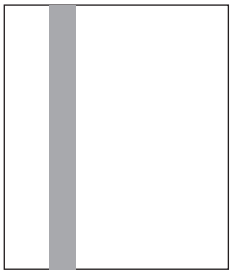
Ⓐ Light or entirely-faced image



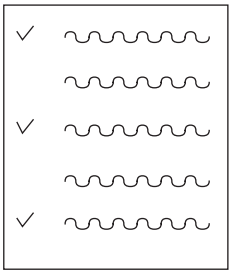
Ⓑ Dirty background



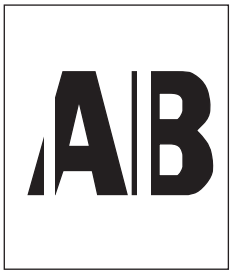
Ⓒ White paper



Ⓓ Vertical black belt/line



Ⓔ Periodic pattern



Ⓕ Vertical white belt/line

Figure 5-2

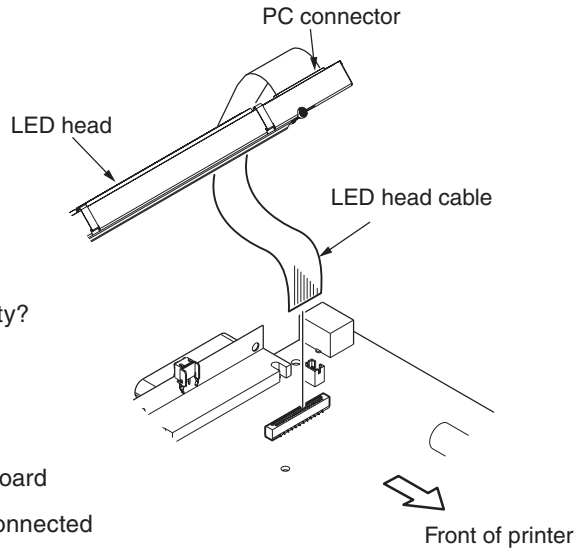
① Light or entirely-faded image

- Is the printer low on toner
  (is a toner-low message displayed on the printer)?
  - Yes Fill the printer with toner.

No Is print paper of a specified size used in the printer?
- No Use print paper of a specified size in the printer.

Yes Is the surface of the lens of the LED head dirty?
- Yes Clean the lens.

No Is the LED head installed properly
(check that the CN5 connector of the main board and the PC connector of the LED head are connected properly)?
- No Install the LED head properly.



Yes Is the contact plate of the transfer roller in contact with the contact assembly of the high-voltage power supply-1/sensor board properly (see figure 5-3)?
- No Adjust the plate so as to make it in good contact with the board and the transfer roller shaft.

Yes Are the contact of the developing roller and the contact of the toner supply roller of the image drum cartridge in contact with the assembly properly (see figure 5-3)?
- No Make adjustments so as to make the contacts in good contact with the assembly.

Yes Replace the transfer roller.

Did this step work?
- Yes End

No Replace the cartridge.

Did this step work?
- Yes End

Note: Reset the image drum counter after the cartridge is replaced (see the user documentation of PN281).

No Is the tension between the back-up roller (7.52 kg) and its surface proper?
- No Replace the roller and the bias spring.

Yes Replace the main board or the high-voltage power supply-1/sensor board.

② Dirty background

- Is the image drum exposed to outside light?
  - Yes Wait for thirty minutes after the drum is installed.
- No Execute the cleaning page function (see section 4.2.2).
- Did this step work?
  - Yes End
- No Is the heat roller of the fuser Assy. dirty?
  - Yes Clean the roller.
- No Is the cleaning roller contact of the image drum cartridge in contact with the contact assembly properly (see figure 5-3)?
  - No Make adjustments so as to make the contact in good contact with the assembly.
- Yes Replace the cartridge.
- Did this step work?
  - Yes End

    Note: Reset the drum counter after the cartridge is replaced (see the user documentation of PN281).
- No Replace the main board or the high-voltage power supply-1/sensor board.

③ Blank paper

- Is the LED head connected properly (check the HEAD connector of the main board and the PC connector of the LED head)?
  - No Connect the head properly or replace the head cable.
- Yes Is the image drum cartridge in contact with the ground contact properly (see figure 5-3)?.
  - No Adjust the ground contact (drum) of the contact assembly.
- Yes Replace the head.
- Did this step work?
  - Yes End
- No Replace the main board or the high-voltage power supply-1/sensor board.

④ Vertical black belt/line

- Execute the cleaning page function (see section 5.2.2).
- Did this step work?
  - Yes End
- No Replace the image drum cartridge.
- Did this step work?
  - Yes End

  Note: Reset the drum counter after the cartridge is replaced (see the user documentation of PN281).
- No Clean the LED lens array of the LED head.
- Did this step work?
  - Yes End
- No Replace the LED head.
- Did this step work?
  - Yes End
- No Replace the main board or the high-voltage power supply-1/sensor board.

⑤ Periodic pattern

	Interval	Solution
Image drum	50.27 mm	Replace or clean the image drum cartridge.
Developing roller	38.84 mm	Replace the image drum cartridge.
Toner supply roller	68.54 mm	Replace the image drum cartridge.
Charging roller	20.56 mm	Replace the image drum cartridge.
Cleaning roller	20.56 mm	Replace the image drum cartridge.
Transfer roller	46.18 mm	Replace the transfer roller.
Heat roller	63.77 mm	Replace the fuser Assy.
Back-up roller	59.69 mm	Replace the back-up roller.

Note: Reset the drum counter after replacing the image drum cartridge (see the user documentation of PN281).

⑥ Void

- Is the contact plate of the transfer roller in contact with the high-voltage power supply-1/sensor board properly (see figure 5-3)?
  - • No Make adjustments so as to make the plate in contact with the board and the transfer roller shaft properly.
- Yes Replace the transfer roller.
- Did this step work?
  - • Yes End

    Note: Reset the drum counter after the image rum cartridge is replaced (see user documentation of PN281).
- No Is the LED head installed properly (check the CN5 connector of the main board and the PC connector of the head)?
  - • No Install the head properly.
- Yes Replace the head or the head cable.
- Did this step work?
  - • Yes End
- No Replace the main board or the high-voltage power supply-1/sensor board.

⑦ Poor fusing (text or image blurs or comes off when touched with hand)

- Is specified paper used in the printer?
  - • No Use specified paper in the printer.
- Yes Is the tension between the back-up roller (7.52 kg) and its surface proper?
  - • No Replace the roller or the bias spring.
- Yes Is the contact of the fuser Assy. in contact with the contact assembly properly (see figure 5-3)?.
  - • No Make adjustments so as to make the contact in contact with the assembly properly.
- Yes Replace the fuser Assy.
- Did this step work?
  - • Yes End
- No Replace the main board or the high-voltage power supply-1/sensor board.

⑧ Vertical white belt/line

- Is the LED lens dirty?
  - Yes Clean it.

No Is the contact plate of the transfer roller in contact with the high-voltage power supply-1/sensor board properly (see figure 5-3)?
  - No Make adjustments so as to make the plate in contact with the board properly.

Yes Replace the transfer roller.

Did this step work?
  - Yes End

Yes Is the tension between the back-up roller (7.52 kg) and its surface proper?
  - No Replace the back-up roller or the bias spring.

Yes Is the LED head installed properly (check the CN5 connector of the main board and the PC connector of the LED head)?
  - No Install the LED head properly.

Yes Replace the LED head.

Did this step work?
  - Yes End

Yes Replace the image drum cartridge.

Did this step work?

Note: Reset the drum counter after the cartridge is replaced (see the user documentation of PN281).

No Replace the main board or high-voltage power supply-1/sensor board.

Contact

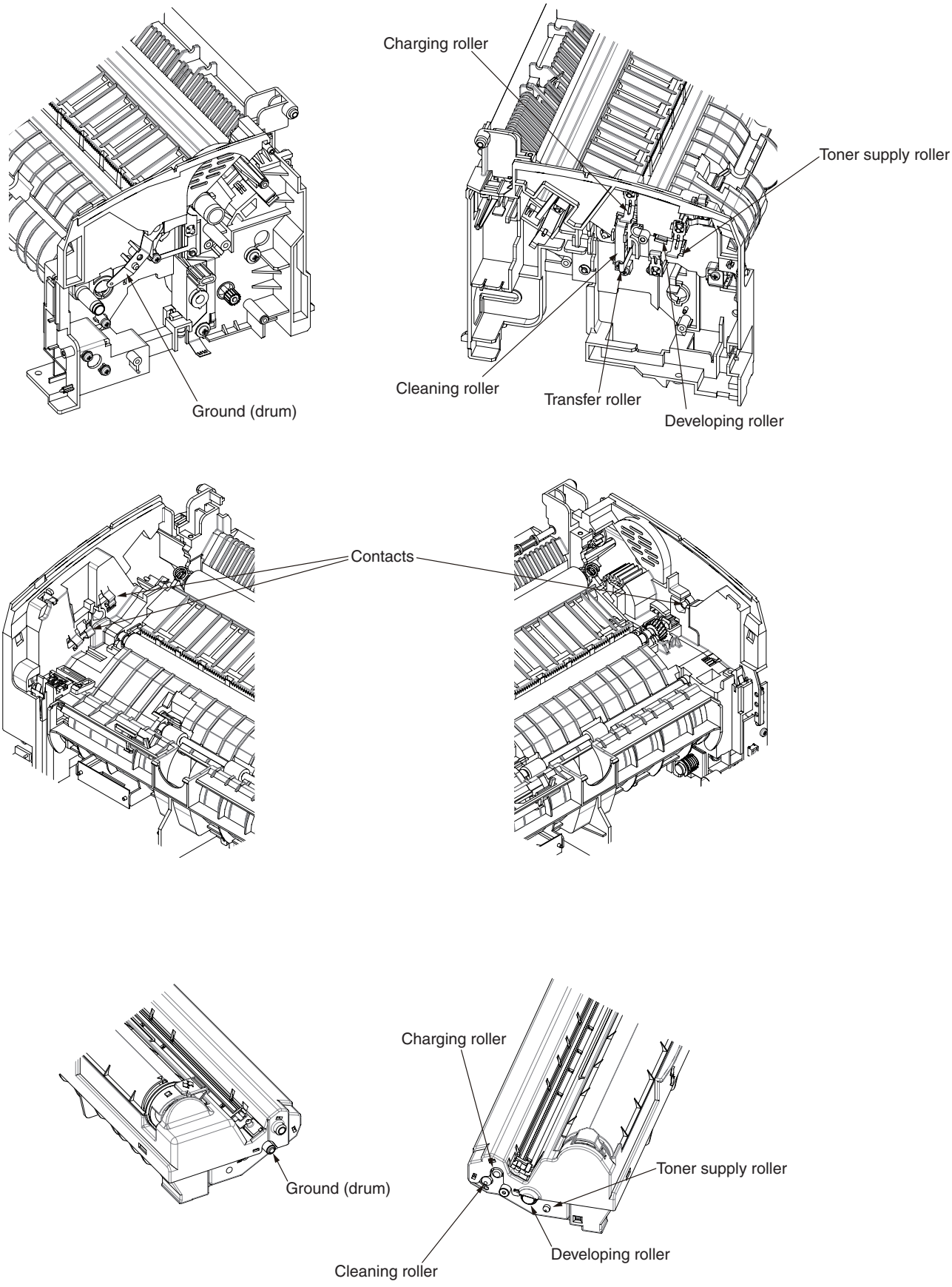
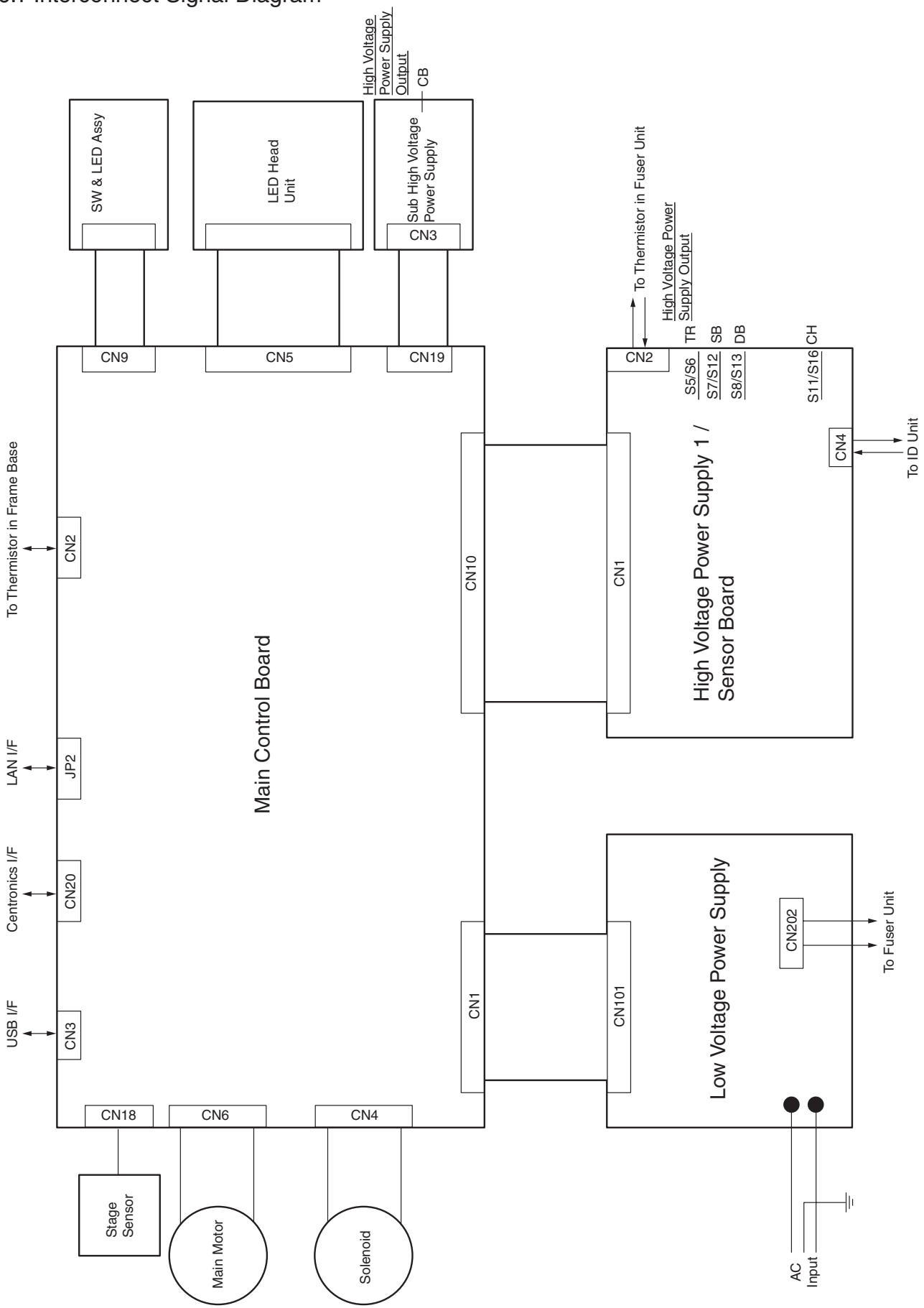


Figure 5-3

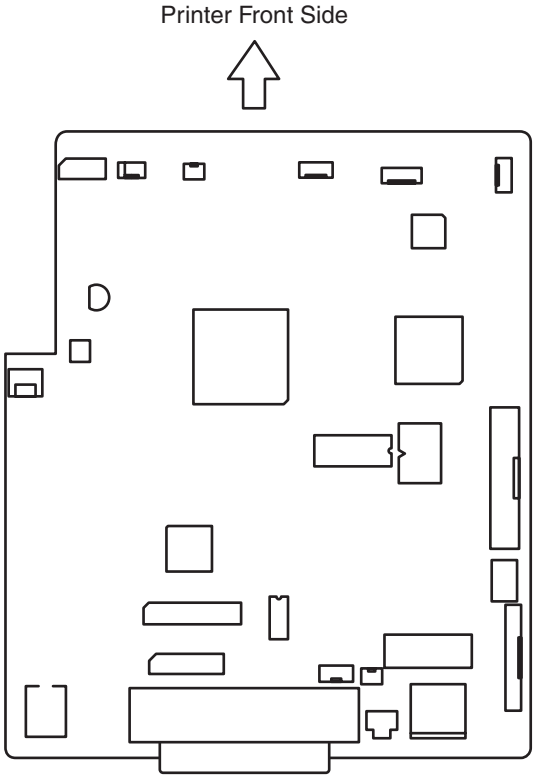
6. WIRING DIAGRAM

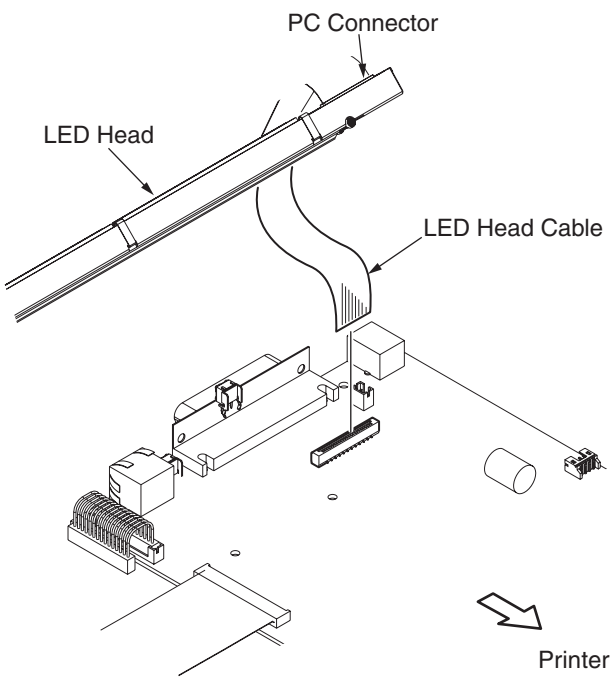
6.1 Interconnect Signal Diagram

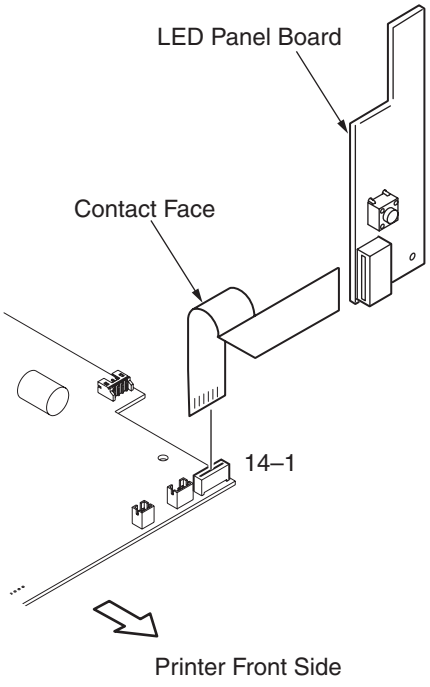


6.2 PCB Layout

(1) Main Control Board







- CN6 Connector Pin Assignment
  (To Main Motor)

	Pin No.	I/O*	Signal	Function
1	1	O	RMPH1-P	Coil 1-P
2	2	O	RMPH1-N	Coil 1-N
3	3	O	RMPH2-P	Coil 2-P
4	4	O	RMPH2-N	Coil 2-N

* I : In
O : Out

Excitation sequence

Pin No.	Wire Color	Step No.			
		1	2	3	4
2	Yellow	+	-	-	+
4	Black	+	+	-	-
1	Orange	-	+	+	-
3	Brown	-	-	+	+

Direction of rotation: Clockwise as viewed from the output shaft

- CN4 Connector Pin Assignment
  (To Hopping Clutch)

	Pin No.	I/O*	Signal	Function
1	1	O	CLTON	Power Supply for clutch Driving
2	2	C	DGND	Ground for Logic

* O : Out
C : Common

- CN18 Connector Pin Assignment
  (To Home Position Sensor)

	Pin No.	I/O*	Signal	Function
1	1	I	PICK_UP	Switch Data
2	2	C	DGND	Ground for logic
3	3	O	+5V	+5V Power Supply

- CN2 Connector Pin Assignment
  (To Frame Temperature Monitoring Sensor)

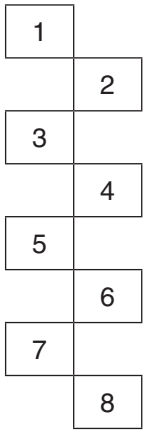
	Pin No.	I/O*	Signal	Function
1	1	O	+5V	+5V Power Supply
2	2	I	Therm2	Thermistor Voltage

- CN5 Connector Pin Assignment
  (To LED Head)

		Pin No.	I/O*	Signal	Function
1		1	C	DGND	Ground for Logic
	2	2	O	HDCLK-P	Clock
3		3	O	HDCLK-N	Clock
	4	4	C	DGND	Ground for Logic
5		5	O	HLD	Load
	6	6	O	HSYNC-N	Strobe 1
7		7	O	HDDATA3	Data 3
	8	8	O	HDDATA2	Data 2
9		9	O	HDDATA1	Data 1
	10	10	O	HDDATA0	Data 0
11		11	O	HSTB-N	Strobe 0
	12	12	O	HSCK	Strobe 3
13		13	O	HSO	Strobe 2
	14	14	O	3.3VCC	+3.3 Power Supply for Logic
15		15	C	LED_GND	Ground for LED
	16	16	O	HEAD	Power Supply for LED Driving
17		17	C	LED_GND	Ground for LED
	18	18	O	HEAD	Power Supply for LED Driving
19		19	C	LED_GND	Ground for LED
	20	20	O	HEAD	Power Supply for LED Driving
21		21	C	LED_GND	Ground for LED
	22	22	O	HEAD	Power Supply for LED Driving
23		23	C	LED_GND	Ground for LED
	24	24	O	HEAD	Power Supply for LED Driving

* I : In
O : Out
C : Common

- CN9 Connector Pin Assignment
  (To Operator Panel)



Pin No.	I/O*	Signal	Function
1	O	+5V	+5V Power Supply
2	O	LED1-P	LED1 ON
3	I	SW1-N	Switch Data
4	O	LED2-P	LED2 ON
5	NC	NC	Non Connection
6	O	LED3-P	LED3 ON
7	C	C	Ground for Logic
8	C	C	Ground for Logic

* I : In
O : Out
C : Common

- CN10 Connector Pin Assignment
  (To High Voltage Power Supply 1 / Sensor Board)

		Pin No.	I/O*	Signal	Function
1		1	I	WRSNS-N	Paper Sensor
	2	2	I	IN1SNS-N	Manual Feed Sensor
3		3	I	TONER-N	Toner Sensor
	4	4	C	DGND	Ground for Logic
5		5	I	IOPT0	Toner Signal
	6	6	C	DGND	Ground for Logic
7		7	O	SBPWN-P	SB2 Output
	8	8	O	+5V	+5V Power Supply
9		9	O	DB1PWM	DB1 Output
	10	10	C	DGND	Ground for Logic
11		11	I	THERM	Thermistor Temp.
	12	12	C	DGND	Ground for Logic
13		13	I	TRI_FB	TR1 Current Detection
	14	14	I	TRV_FB	TR1 Voltage Detection
15		15	I	DB2_V_FB	DB2 Voltage Detection
	16	16	I	CHI	Frame Thermistor Temp.
17		17	I	CH_V_FB	CH Voltage Detection
	18	18	I	DB2_I	DB2 Current Detection
19		19	I	SB2_V_FB	SB2 Voltage Detection
	20	20	C	DGND	Ground for Logic
21		21	O	CHPWM-P	CH Output
	22	22	O	DB2PWM-P	DB2 Output
23		23	O	TR2PWM-P	TR2 Output
	24	24	O	TR1PWM-P	TR1 Output
25		25	O	+5V	+5V Power Supply
	26	26	O	+5V	+5V Power Supply
27		27	C	DGND	Ground for Logic
	28	28	C	DGND	Ground for Logic
29		29	I	OUTSNS-N	Paper Out Sensor
	30	30	I	CVOPN-N	Cover Open

* I : In
O : Out
C : Common

- CN1 Connector Pin Assignment
  (To Low Voltage Power Supply)

	Pin No.	I/O*	Signal	Function
1	1	NC	NC	Non Connection
2	2	C	DGND	Ground for Logic
3	3	C	DGND	Ground for Logic
4	4	I	+5V	Power Supply for Logic
5	5	I	+5V	Power Supply for Logic
6	6	O	HEAT ON-N	Heater On
7	7	C	DGND	Ground for Logic
8	8	I	HEAD	LED Head Power Supply
9	9	I	HEAD	LED Head Power Supply
10	10	C	LED_GND	LED Head Ground
11	11	C	LED_GND	LED Head Ground
12	12	C	DGND	Ground for Logic
13	13	C	DGND	Ground for Logic
14	14	I	+34V	Motor Drive Power Supply
15	15	I	+34V	Motor Drive Power Supply

* I : In
O : Out
C : Common

- CN19 Connector Pin Assignment
  (To Sub High Voltage Power Supply)

	Pin No.	I/O*	Signal	Function
1	1	O	+5V	+5V Power Supply
2	2	O	CB1PWM-P	CB1 Output
3	3	O	CB2PWM-P	CB2 Output
4	4	C	DGND	Ground for logic

- CN3 Connector Pin Assignment
  (To USB I/F)

1	3
2	4

Pin No.	I/O*	Signal	Function
1	I	VCC	+3.3V
2	I/O	D-	Serial Data
3	I/O	D+	Serial Data
4	C	GND	Logic Ground

* I : In
O : Out
C : Common

- JP2 Connector Pin Assignment
  (To LAN I/F)

Pin No.	I/O*	Signal	Function
1	O	TX+	Transmitting signal output +
2	O	TX-	Transmitting signal output -
3	I	RX+	Received signal output +
4	NC	NC	Non connection
5	NC	NC	Non connection
6	I	RX-	Received signal output -
7	NC	NC	Non connection
8	NC	NC	Non connection

• CN20 Connector Pin Assignment
(To Centronics I/F)

1	19
2	20
3	21
4	22
5	23
6	24
7	25
8	26
9	27
10	28
11	29
12	30
13	31
14	32
15	33
16	34
17	35
18	36

Pin No.	I/O*	Signal	Function	Pin No.	I/O*	Signal	Function
1	I	STB-N	Strobe	19	C	SG	Logic Ground
2	C	DATA0-P	Data Bit 0	20	C	SG	Logic Ground
3	C	DATA1-P	Data Bit 1	21	C	SG	Logic Ground
4	C	DATA2-P	Data Bit 2	22	C	SG	Logic Ground
5	C	DATA3-P	Data Bit 3	23	C	SG	Logic Ground
6	C	DATA4-P	Data Bit 4	24	C	SG	Logic Ground
7	C	DATA5-P	Data Bit 5	25	C	SG	Logic Ground
8	C	DATA6-P	Data Bit 6	26	C	SG	Logic Ground
9	C	DATA7-P	Data Bit 7	27	C	SG	Logic Ground
10	O	ACK-N	Acknowledge	28	C	SG	Logic Ground
11	O	BUSY-P	Busy	29	C	SG	Logic Ground
12	O	PE-P	Paper End	30	C	SG	Logic Ground
13	O	SEL-P	Select	31	I	IPRIM-N	I-Prime
14	I		Auto Feed	32	O	FAULT-N	Fault
15		NC	Non Connection	33	C	SG	Logic Ground
16	C	SG	Logic Ground	34		NC	Non Connection
17	C	FG	Chassis Ground	35	O	HILEVEL	High Level
18	O	HILEVEL	High Level	36	I	SELIN-N	Select In

* I : In
O : Out
C : Common

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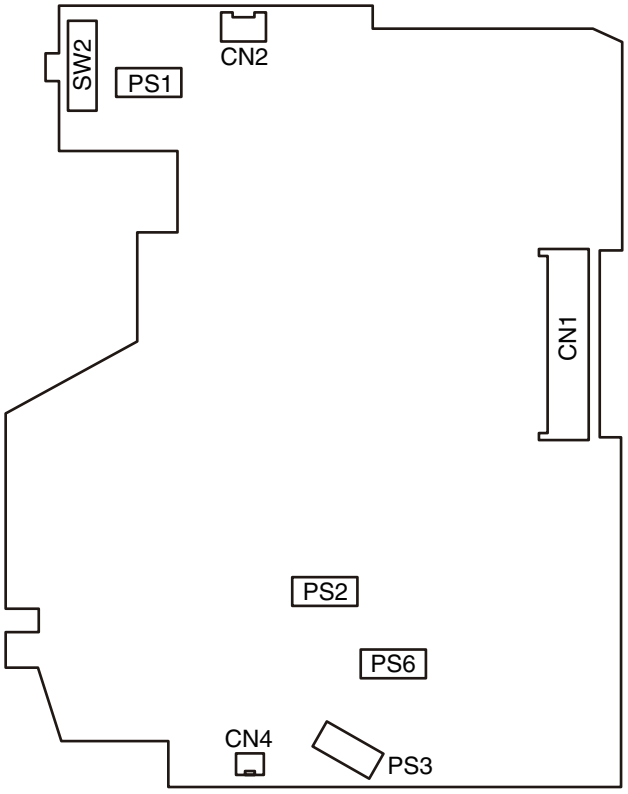
(2) High Voltage Power Supply 1 / Sensor Board



- CN1 Connector Pin Assignment
  (To Main Control Board)

		Pin No.	I/O*	Signal	Function
1		1	O	WRSNS-N	Write Sensor
	2	2	O	IN1SNS-N	Paper Size Sensor 1
3		3	O	TONER-N	Toner Sensor
	4	4	C	DGND	Ground for Logic
5		5	O	Relay	Toner Signal
	6	6	C	DGND	Ground for Logic
7		7	I	SBPWN-P	SB2 Output
	8	8	I	+5V	+5V Power Supply
9		9	I	DB1PWM	DB1 Output
	10	10	C	DGND	Ground for Logic
11		11	O	THERM	Thermistor Temp.
	12	12	C	DGND	Ground for Logic
13		13	O	ISEN	TR1 Current Detection
	14	14	O	VSEN	TR1 Voltage Detection
15		15	O	DB_V_FB	DB2 Voltage Detection
	16	16	O	CH_I	CH Current Detection
17		17	O	CH_V_FB	CH Voltage Detection
	18	18	O	DB_I	DB Current Detection
19		19	O	SB_V_FB	SB2 Voltage Detection
	20	20	C	DGND	Ground for Logic
21		21	I	CHPWM-P	CH Output
	22	22	I	DB2PWM	DB2 Output
23		23	I	TR2PWM-P	TR2 Output
	24	24	I	TR1PWM-P	TR1 Output
25		25	I	+5V	+5V Power Supply
	26	26	I	+5V	+5V Power Supply
27		27	C	DGND	Ground for Logic
	28	28	C	DGND	Ground for Logic
29		29	I	EXIT	Paper Out Sensor
	30	30	O	CVOPN-N	Cover Open

* I : In
O : Out
C : Common

- CN2 Connector Pin Assignment
  (To Thermistor)

	Pin No.	I/O*	Signal	Function
1	1	O	+5V	+5V
2	2	NC	NC	Non Connection
3	3	I	THERM	Thermistor Voltage

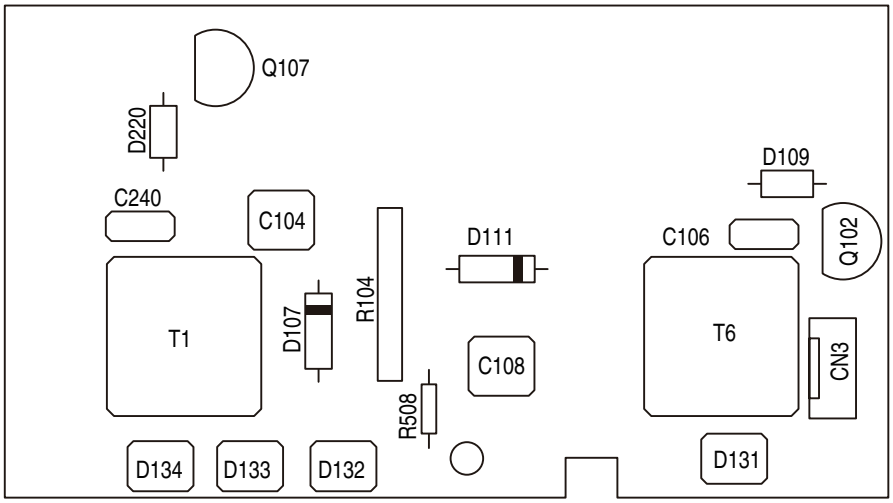
* I : In
O : Out
C : Common

- CN4 Connector Pin Assignment
  (To Toner Cartridge)

	Pin No.	I/O*	Signal	Function
1	1	O	Relay	Toner Signal
2	2	C	DGND	Ground for Logic

* I : In
O : Out
NC : Non Connection
C : Common

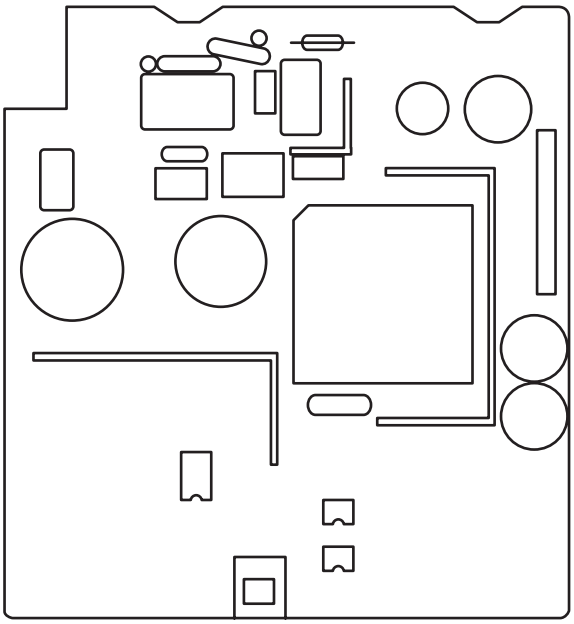
(3) Sub High Voltage Power Supply



- CN3 Connector Pin Assignment
  (To Main Control Board)

	Pin No.	I/O*	Signal	Function
1	1	C	DGND	Ground for Logic
2	2	I	CB2PWM-P	CB2 Output
3	3	I	CB1PWM-P	CB1 Output
4	4	I	H5V	+5V Power Supply

(4) Low Voltage Power Supply



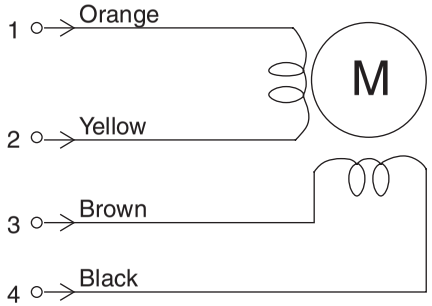
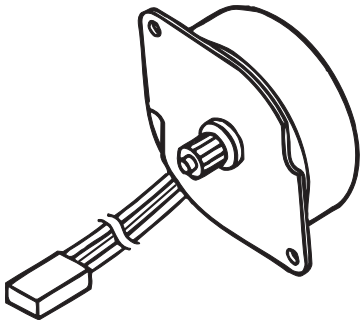
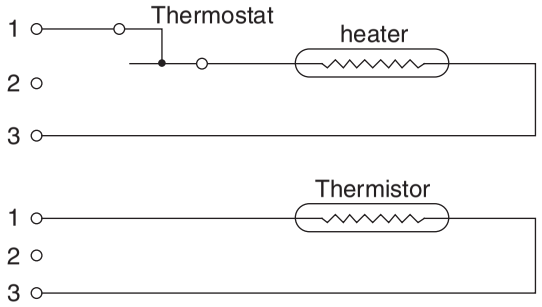
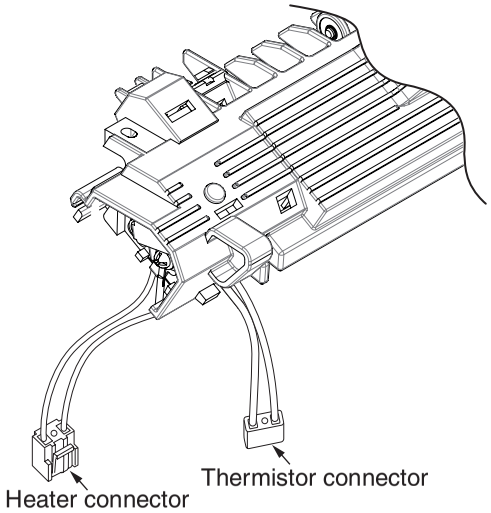
- CN101 Connector Pin Assignment
  (To Main Control Board)

	Pin No.	I/O*	Signal	Function
1	1	NC	NC	Non Connection
2	2	C	DGND	Ground for Logic
3	3	C	DGND	Ground for Logic
4	4	O	+5V	+5V Power Supply
5	5	O	+5V	+5V Power Supply
6	6	I	HEAT_ON-N	+5V Power Supply
7	7	C	DGND	Ground for Logic
8	8	O	HEAD	LED Head power supply
9	9	O	HEAD	LED Head Power Supply
10	10	C	LED_GND	LED Head Ground
11	11	C	LED_GND	LED Head Ground
12	12	C	DGND	Ground for Logic
13	13	C	DGND	Ground for Logic
14	14	O	+34V	+34V Power Supply
15	15	O	+34V	+34V Power Supply

* I : In
O : Out
C : Common

- CN202

Pin No.	I/O*	Signal	Function
1	–	AC(NEUTRAL)	AC(NEUTRAL)
2	NC	–	Non Connection
3	–	AC(LINE)	AC(LINE)

Unit	Circuit Diagram	Illustration	Resistance
Pulse Motor (Main)			Between Pins 1 and 2 : 3.2Ω Between Pins 3 and 4 : 3.2Ω
Fuser Assy			Between Pins 1 and 3 : 1.6Ω Between Pins 1 and 3 : 360kΩ ±5% (at room temperature)

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APPENDIX A CENTRONICS PARALLEL INTERFACE

(1) Connector

- Printer side : 36-pin receptacle (female)
  Type 57RE-40360-730B-D29A (made by Daiichi Denshi) or equivalent

- Cable side : 36-pin plug (male)
  Type 57FE-30360-20N(D8) (made by Daiichi Denshi) or equivalent

(2) Cable

Use an IEEE Std 1284-1994 compliant cable (or equivalent) with a length of 1.8 m max.
(A shielded twisted pair cable is recommended to prevent noise.)

Note: No cable is supplied with the printer or available from Oki Data.

(3) Parallel I/F Signal List

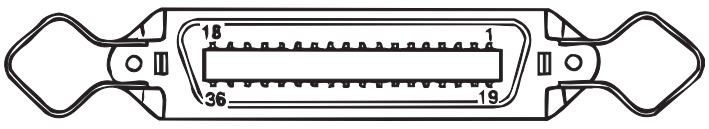
Pin No.	Signal Name	Direction	Function
1	nStrobe(HostClk)	TO PRINTER	Pulse used for data reading. Data is read at its trailing edge.
2	DATA 1	TO PRINTER	8-bit parallel data High level: 1 Low level: 0
3	DATA 2		
4	DATA 3		
5	DATA 4		
6	DATA 5		
7	DATA 6		
8	DATA 7		
9	DATA 8		
10	nAck(PtrClk)	FROM PRINTER	Signal indicating completion of data reception.It is outputted at the trailing edge of Busy signal.
11	Busy(PtrBusy)	FROM PRINTER	Signal indicating whether the printer is ready to receive data or not. When the signal is at high level, the printer is not ready to receive data.
12	Perror(AckDataReq)	FROM PRINTER	This signal becomes high level when there is no paper in the feeder entrance.
13	Select(Xflag)	FROM PRINTER	Always at high level.
14	nAutoFd(HostBusy)	TO PRINTER	Used for bi-directional communication.
15	Reserved	–	Not connected.
16	GND	–	Signal ground
17	nInit(nInit)	–	Chassis ground
18	HILEVEL	FROM PRINTER	Pulled up to +5V through 3.3kΩ resistance inside the printer.
19-30	GND	–	Signal ground
31	nInit(nInit)	TO PRINTER	When the low level lasts for about 50 µs or longer, the printer is initialized. This may be active even if the low level lasts only for less than 50 µs. With the factory defaults, this signal is ignored.
32	nFault(nDataAvail)	FROM PRINTER	This signal becomes low level when the printer is in alarm state.
33	GND	–	Signal ground
34	Reserved	–	Not connected.
35	HILEVEL	FROM PRINTER	Pulled up to +5V through 3.3kΩ resistance inside the printer.
36	nSelectIn (IEEE 1284 active)	TO PRINTER	Used for bi-directional communication.

(Note 1) The signal name in parentheses shows the one in Nibble mode.

(Note 2) The function in Compatible mode is only described.

(Note 3) This printer supports the Nibble mode defined in the IEEE Standard 1284-1994 issued by the Institute of Electrical and Electronics Engineers, Inc. Using computers or cables that are not compliant with this standard may cause unexpected behavior.

- Connector pin arrangement



(4) Signal Level

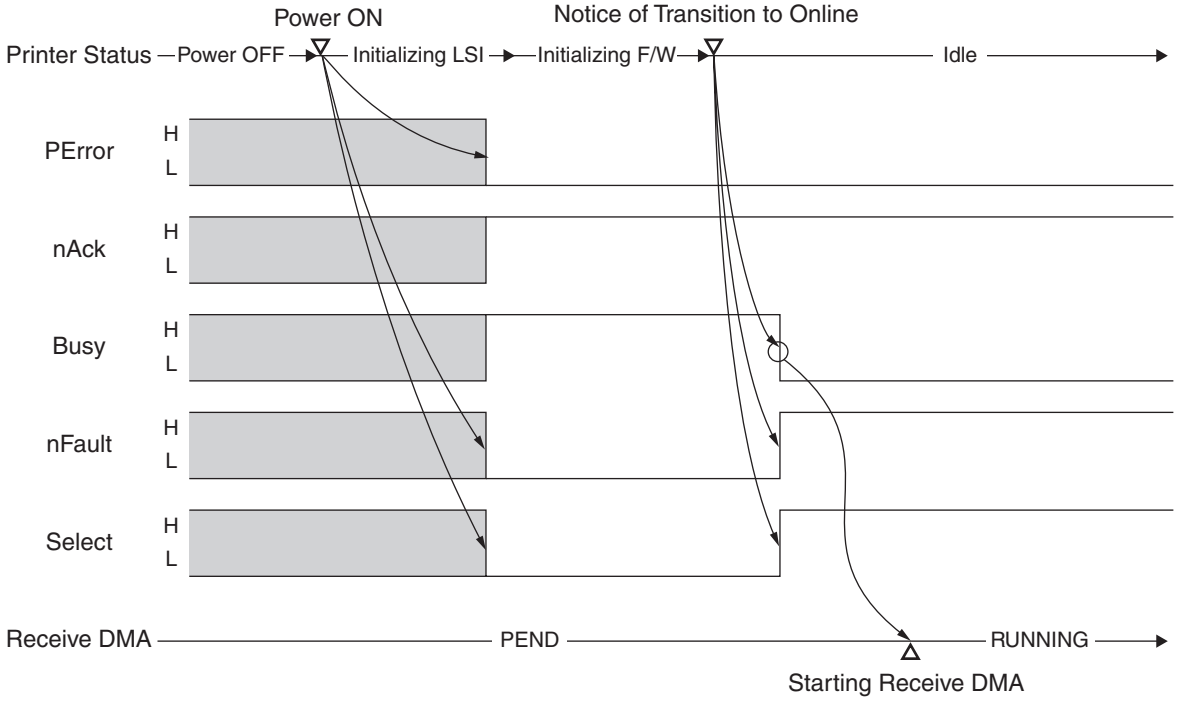
- LOW : 0V to +0.4V
- HIGH : +2.4V to 5.0V

(5) Specifications

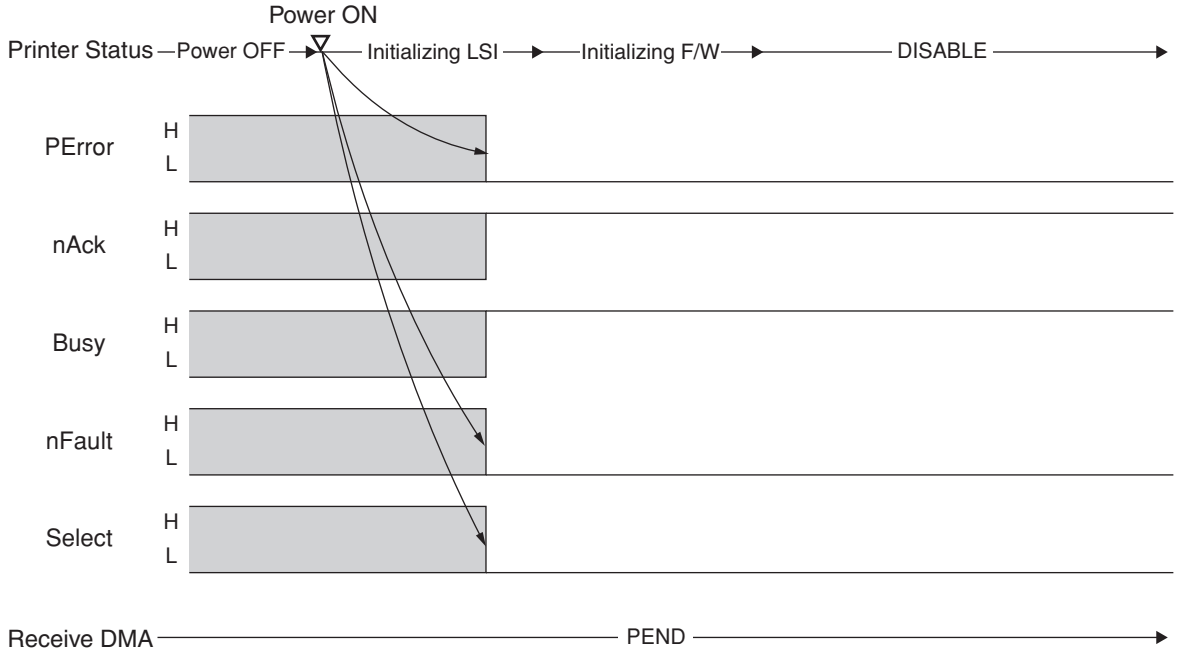
Item	Description
Mode	Compatible, Nibble, ECP
Data bit length	8 bits (in Compatible mode)
Input prime	Enabled/Disabled
Receive buffer	8Kbyte, 20Kbyte, 50Kbyte, 100Kbyte, 1Mbytes
Control	Handshake control is performed in each mode.Data received from the host is stored in the receive buffer. Busy control is performed. Signal read control is performed.

(6) Time Charts

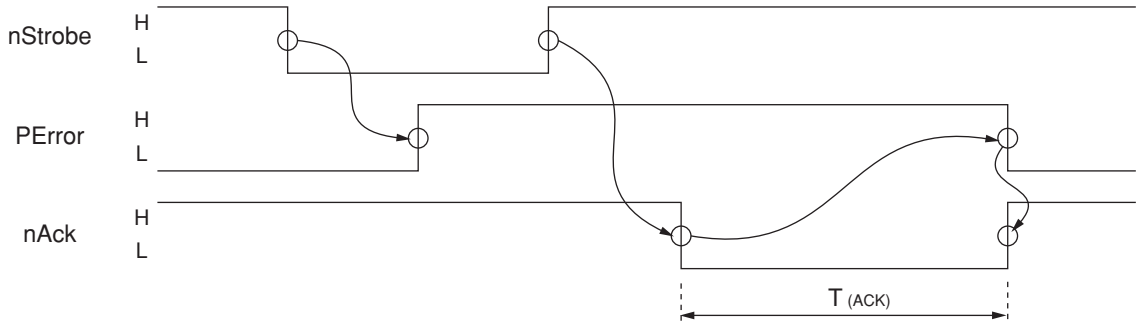
a) Power ON (Menu setting: PARALLEL = ENABLE)



b) Power ON (Menu setting: PARALLEL = DISABLE)

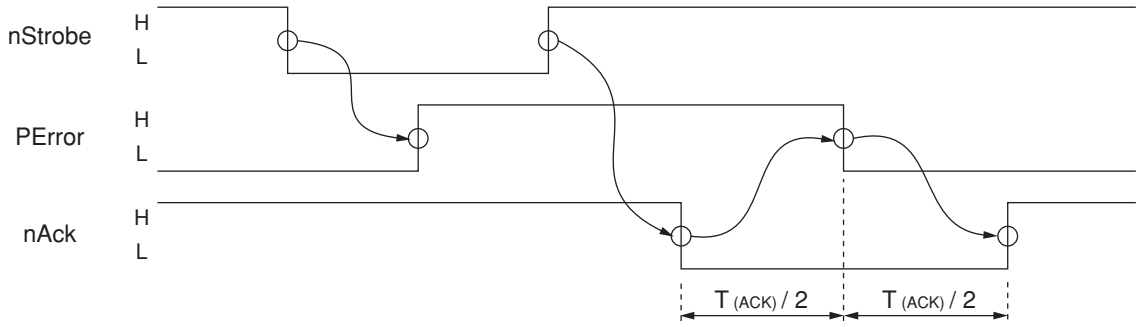


c) Data Reception (Menu setting: Ack/Busy Timing = Ack in Busy)



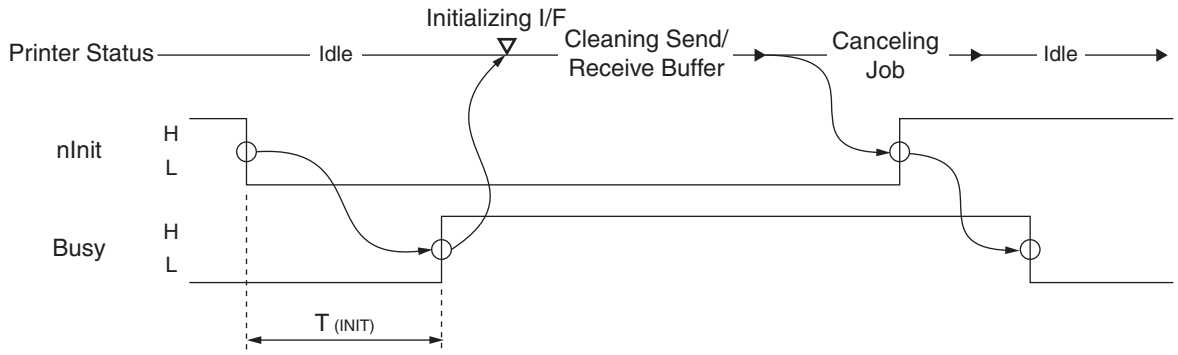
Menu Setting (Ack Width)	NARROW	MEDIUM	WIDE
T (ACK)	0.5 us	1.0 us	3.0 us

d) Data Reception (Menu setting: Ack/Busy Timing = Ack while Busy)



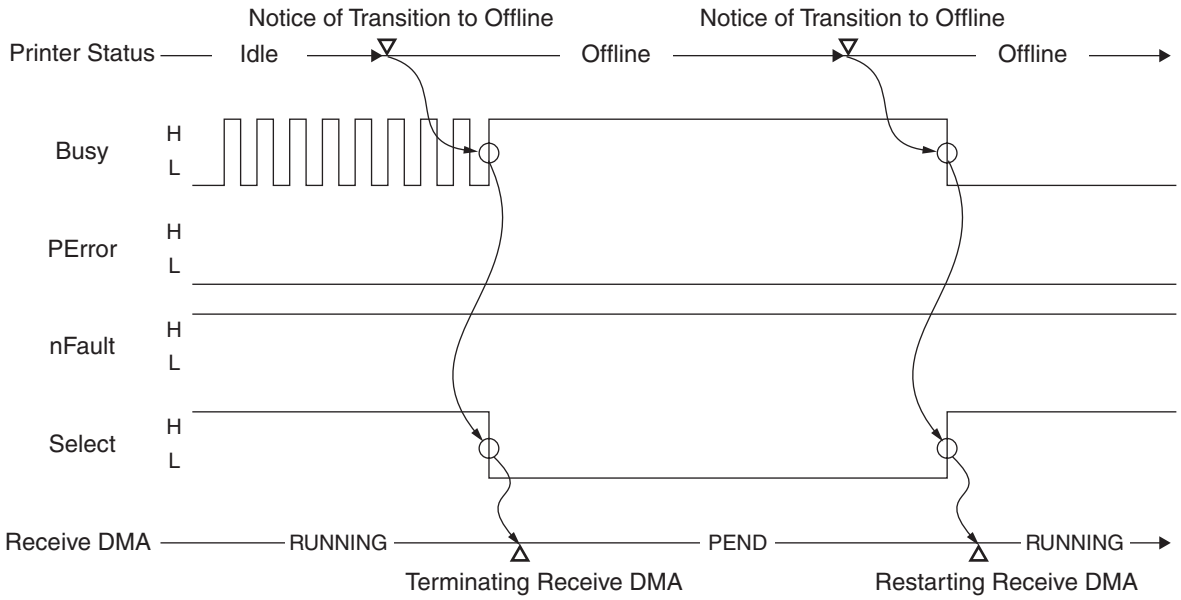
Menu Setting (Ack Width)	NARROW	MEDIUM	WIDE
T (ACK)	0.5 us	1.0 us	3.0 us

e) I-Prime (Menu setting: I-PRIME ≠ DISABLE)

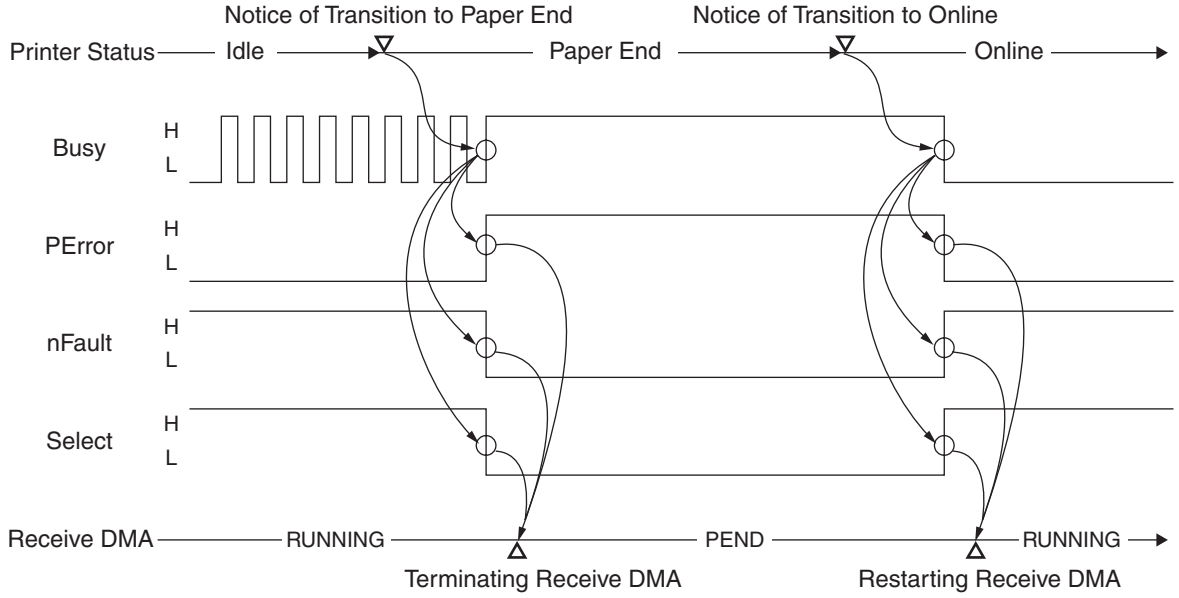


Menu Setting (I-PRIME)	3 MICRON SEC	50 MICRON SEC
T (INIT)	2.0 us	33.3 us

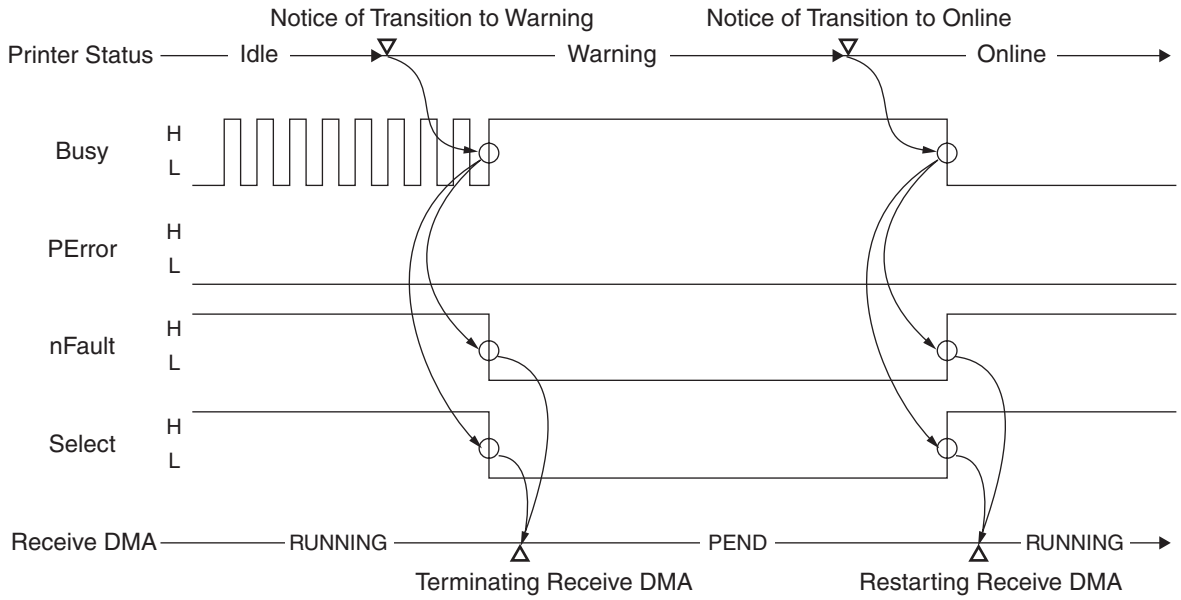
f) Offline



g) Paper End



h) Warning (Paper-end state is excluded.)



APPENDIX B USB INTERFACE

(1) Connector

- Printer side : B receptacle (female) (Upstream port)
  USB-4R-D14T-1 (made by J.S.T. Mfg.) or equivalent

- Cable side : B plug (male)

(2) Cable

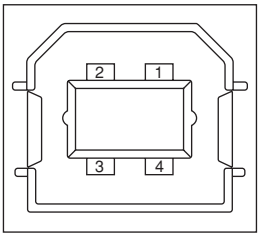
- Use a USB2.0 cable with a length of 2.0 m max. (A shielded cable is recommended.)

Note: No cable is supplied with the printer.

(3) Interface Signal List

Contact No.	Signal	Function
1	vbus	Power supply (+5V) (Red)
2	D-	Data transfer (White)
3	D+	Data transfer (Green)
4	GND	Signal ground (Black)
Shell	Shield	

(4) Connector Pin Arrangement



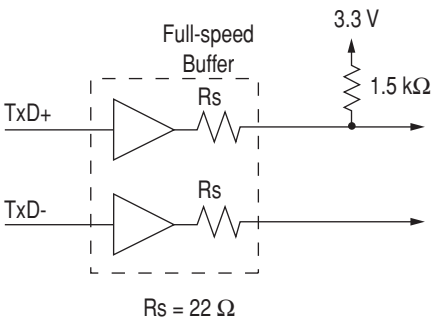
(5) Mode and Type

- Full-speed transmission mode
- Self-powered device

(6) Data Signaling Rate

- Full speed: 12 Mbps

(7) Interface Circuit



(8) Signal Level

- Input/Output Level

Parameter	Signal	Min.	Max.	Unit
Input Level:				
High (driven)	VIH	2.0		V
High (floating)	VIHZ	2.7	3.6	V
Low	VIL		0.8	V
Output Level:				
Low	OL	0.0	0.3	V
High (driven)	OH	2.8	3.6	V
Output Signal Crossover Voltage	VCRS	1.3	2.0	V

- Signal Level

Bus state	Signal Level	
	Required	Acceptable
Differential “1”	(D+) – (D-) > 200 mV and D+ > VIH (min)	(D+) – (D-) > 200 mV
Differential “0”	(D-) – (D+) > 200 mV and D- > VIH (min)	(D-) – (D+) > 200 mV
Single-ended 0 (SE0)	D+ and D- < VIH (max)	D+ and D- < VIH (min)
Data J state: Low speed Full speed	 Differential “0” Differential “1”	
Data K state: Low speed Full speed	 Differential “1” Differential “0”	
Idle state: Low speed Full speed	 D- > VIHZ (min) and D+ < VIL (max) D+ > VIHZ (min) and D- < VIL (max)	 D- > VIHZ (min) and D+ < VIH (max) D+ > VIHZ (min) and D- < VIH (max)
Resume state	Data K state	
Start of packet (SOP)	Data lines switch from Idle to K state.	
End of packet (EOP)	SE0 for ≥ 1 bit time, followed by J state for 1 bit time	SE0 for ≥ 1 bit time, followed by J state
Disconnect (at downstream port)	SE0 for ≥ 2.5 µs	
Connect (at downstream port)	Idle for ≥ 2.5 ms	Idle for ≥ 2.5 µs
Reset	D+ and D- < VIL (max) for ≥ 10 ms	D+ and D- < VIL (max) for ≥ 2.5 µs

Note: The width of EOP is defined in bit time relative to the device type receiving the EOP. The bit time is approximate.

APPENDIX C NETWORK INTERFACE

(1) Connector

- 8-pin modular jack

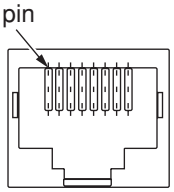
(2) Cable

- Category -5, unshielded twisted pair cable with RJ-45 connector

(3) Signal List

Pin No.	Signal Name	Direction	Function
1	TXD+	FROM PRINTER	Send data +
2	TXD-	FROM PRINTER	Send data -
3	RXD+	TO PRINTER	Receive data +
4	–	–	Not used.
5	–	–	Not used.
6	RXD-	TO PRINTER	Receive data -
7	–	–	Not used.
8	–	–	Not used.

(4) Appearance



(5) Physical Layer

a) CSMA/CD transmission method

b) Transmission protocol

Packet Type	Support	Remarks
Ethernet II	○	
IEEE802.3	–	
IEEE802.3+IEEE802.2	–	
IEEE802.3+IEEE802.2+SNAP	–	

(6) List of Protocols

Protocol Family	Protocols Used for Printing (1)	Protocols Used for Setup Reference (2) and Change (3)	Other Protocols
TCP/IP	LPR Port 9100	HTTP SNMP DHCP/BOOTP AutoIP DNS	TCP, IP, ICMP, ARP UDP

(7) TCP/IP

a) Supported OS

Windows95
Windows98
Windows Me
WindowsNT 4.0
Windows2000
WindowsXP

b) LPR

The LPR is an application to process the print data.
The LPR of this system supports multiple clients. Furthermore, it provides multiple connections for one client.

Item	Factory Default	Setup Range	Description
Number of clients connected	1 to 8 clients	1 to 8 clients	Indicates the number of clients that can be simultaneously connected. Up to 8 clients can be simultaneously connected.

First Command Character	LPR Option	Objective	Support
H	Specify by default.	Host name of the machine to which the LPR is called. Host name printed on the banner sheet.	–
P	Specify by default.	Log-in name of the user that has called the LPR. User name printed on the banner sheet.	–
J	Specify by -J option.	Job name printed on the banner sheet. Default: File name	–
C	Specify by -C option.	Job type printed on the banner sheet.Default: System name	–
L	Specify by default.Cancel the specification by -h option.	Specify literal banner sheet printing.	–
f	Specify the number of volumes by -# option.	Name of the data file to be printed.The number of character strings of this command varies according to the number of volumes. (Not supported)	–
U	Specify by default.	Name of the file to be deleted with completion of printing.	–
I	Specify by -i option.	Number of indent characters in the output line.	–
W	Specify by -w option.	Specify page width.	–
M	Specify by -m option.	Specify sending of a mail with completion of printing.	–
S	Specify by -s option.	Specify the symbolic link to the data file.	–
1/2/3/4	Specify by -1/-2/-3/-4 option.	Specify the font.	–

c) HTTP

The HTTP is an application to reference and change the menu of the Network/Printer.

The HTTP of this system supports simultaneous connection of multiple clients for personal users. Furthermore, it provides multiple connections for one client.

Item	Factory Default	Setup Range	Description
HTTP version	1.0	1.0	Indicates the version of the HTTP being implemented.

d) SNMP

The SNMP is an application to reference and change the menu of the Network/Printer.

The SNMP of this system supports simultaneous connection of multiple clients for personal users. Furthermore, it provides multiple connections for one client.

(8) Setup

Each setup item can be set by the network management tool.

		Value	Description
Web Browser	NIC Setup Tool		
IP Address Setting	IP Address Acquisition Method	Auto	Sets whether to acquire an IP address or not in the DHCP/BOOTP server.
		Manual	
IP Address	IP Address	192.168.100.100 or 169.254.xxx.xxx	Sets an IP address.If the network cable is connected to the hub after the initialization of the network, the IP address will be 192.168.100.100. If, even with “AUTO” IP address setting, a server that automatically provides an IP address, such as a DHCP server, does not exist on the network, the IP address will be 169.254.xxx.xxx even when the network cable is connected to the hub.
Host Name	-	“Product name” + “-“ + “Last 6 digits of Ethernet address”	Sets a value used for a DHCP server to identify clients.
Subnet Mask	Subnet Mask	255.255.255.0 or 255.255.0.0	Sets a subnet mask. If the network cable is connected to the hub after the initialization of the network, the IP address will be 255.255.255.0. If, even with “AUTO” IP address setting, a server that automatically provides an IP address, such as a DHCP server, does not exist on the network, the IP address will be 255.255.0.0 even when the network cable is connected to the hub.
Gateway Address	Default Gateway Address	0.0.0.0	Sets a gateway (default router) address. 0.0.0.0 means no router.
Printer Name	-	“OKI” + “-“ + “Product name” + “-“ + “Last 6 digits of Ethernet address”	Sets a name to identify the unit on the network.
Administrator Contact	-	None	Enters a system administrator’s contact. Up to 225 one-byte characters can be entered.
Printer Name	-	None	Enters the name of the printer. Up to 31 one-byte characters can be entered.
Installation Location	-	None	Enters the installation location of the printer. Up to 255 one-byte characters can be entered.
Printer Management No.	-	None	Enters a value used for customer’s management of the printer. Up to 8 one-byte characters can be entered.

Web Browser	NIC Setup Tool	Value	Description
SNMP Setting	-	SNMP v 1	Sets the version of the SNMP used.
		DISABLE	
SNMP Read Community Setting	-	public	Sets the Read Community used in the SNMP v 1. Up to 15 alphanumeric characters can be entered.
SNMP Write Community Setting	-	public	Sets the Write Community used in the SNMP v 1. Up to 15 alphanumeric characters can be entered.
HUB Link Setting	-	AUTO NEGOTIATION	Sets HUB link setting (transmission method and rate). It should normally be set to AUTO NEGOTIATION.
		100BASE-TX FULL	
		100BASE-TX HALF	
		10BASE-T FULL	
		10BASE-T HALF	
Web (Port No: 80)	Printer Setup (Web)	ENABLE	Sets whether to enable/disable access through a Web browser in the printer.
		DISABLE	
Web	-	1	Sets a port number to gain access to the Web page for the printer. Note that the following port numbers cannot be set because the unit already uses them. Port numbers: 23, 515, 9100, 161, 9966
		80	
		65535	
SNMP	-	ENABLE	Sets whether to enable/disable access through SNMP in the printer. Select ENABLE for normal use.
		DISABLE	
Local Ports	-	ENABLE	Sets whether to enable/disable a unique protocol.
		DISABLE	
Password Setting	Password Change	Last 6 digits of Ethernet address	Changes the administrator's password. Up to 15 alphanumeric characters can be entered. Case sensitivity is on. If the password is forgotten, it cannot be changed.